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THE

MEDICAL JOURNAL OF AUSTRALIA

VOL. II.—11TH YEAR. SYDNEY: SATURDAY, NOVEMBER 29, 1924. No. 22.

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RHEUMATOID ARTHRITIS.[1]

By C. T. CHAMPION DE CRESPIGNY, D.S.O., M.D., B.S. (Melbourne), M.R.C.P. (London),

Honorary Physician, Adelaide Hospital; Honorary Physician, Adelaide Children's Hospital; Lecturer on the Principles and Practice of Medicine, The University of Adelaide.

OF all common diseases rheumatoid arthritis is one of the most mysterious in its causation. Over its course we have but little control and its results we can but alleviate, scarcely ever wholly correct.

CLINICAL TYPES.

The morbid process may vary in activity from that of an acute general infection to one of slow chronicity and it usually shows a characteristic tendency to wax and wane. The acute forms are the least common. They occur usually in young people, more often females. Many joints are simultaneously affected or perhaps in rapid succession. The small joints of the hands and feet suffer most frequently, but the wrists, elbows, ankles and knees are usually affected also. Often the temporo-maxillary and inter-vertebral articulations are involved. The temperature is febrile, the pulse frequent and out of due proportion to the temperature and there may be profuse sweats. Medicinal treatment seems to have no influence over the course of the arthritis or the constitutional symptoms.

At the other end of the scale we meet with patients in whom the disease progresses for many years. Beginning in two or three of the smaller joints, the process may extend by irregularly recurring advances until in the worst cases almost every articulation has been affected, including those of the jaw, spinal column and ribs and the patient may be thereby rendered almost completely immobile.

Not the least remarkable feature of this disease is the tendency to die out spontaneously. After a varying number of years its activity may abate and finally cease, so that the patient is left in comparative peace so far as pain is concerned and, if the damage to the joints has not been too extensive nor the deformity too disabling, she may regain a fair amount of activity and usefulness.

ÆTIOLOGY.

That this is an infective condition, there can be but little doubt. Even in the more chronic forms, there is usually some pyrexia during an exacerbation, while acute rheumatoid arthritis has all the

[1] Read at a meeting of the South Australian Branch of the British Medical Association on September 25, 1924.

characteristics of an active infection. The nature of the infection seems quite unknown. Every form of bacteriological or serological investigation has hitherto rendered completely barren results. The study of the joint fluids and of the cytology of the blood gives no clue. Bio-chemistry has not aided us in indicating a metabolic origin for the condition.

Although the search for local infection has given fruitful results in revealing the origin of the virus in some other forms of arthritis, in true rheumatoid arthritis the virus does not seem to be associated with disease in tonsil, tooth-socket, sinus, appendix, gall bladder, prostate, Fallopian tube or in any other retreat of the malign and ubiquitous streptococcus. Doubtless, in people suffering from this disease foci of infection may exist as frequently as in the same number of people whom we may meet in the street, but this does not prove a causal connexion. The eradication of such a focal infection may cause some improvement of general health, but in my own experience it has not arrested the disease in its progress or caused any recognizable improvement in the joint condition.

Pathology of the Joint Lesion.

Primarily the morbid change seems to be in the synovial membrane which is hyperæmic and thickened. The synovial fluid may be increased in amount, it is sometimes viscous and usually shows microscopically a moderate number of lymphocytes and large mono-nuclear cells. The polymorpho-nuclear leucocytes are present only in small numbers. The articular cartilages may be only slightly eroded in the earliest stages. In the later the cartilage may be more or less destroyed. The peri-articular structures are softened and thickened. In this way from the thickening of the synovial membrane, increase in joint fluid and enlargement of the surrounding structures the characteristic spindle-shaped swelling is produced. Later the alignment of the bones and their apposition is altered, so that subluxation may occur. In the large joints this deformity is due to the position in which the joint is held to relieve pain. In the smaller occurs the well known diflexion, towards the ulnar side in the case of the metacarpo-phalangeal joints of the hand and towards the fibular side in the case of the metatarsal and metacarpo-phalangeal joints of the foot. The cause of the diflexion is not clear. The final stage may be either that of undue mobility or of complete fixation with varying degree of deformity. Hence the name of *"arthritis deformans."*

Associated Changes.

The muscles which move the affected joints, are over-irritable and waste very rapidly. The bones also waste and undergo partial decalcification. They show but little, if any, tendency towards the osteophytic overgrowth of the articular margin so characteristic of osteo-arthritis.

The skin may show a muddy pigmentation especially in the region of the affected joints and the pigmentation may be associated with areas of leucodermia, especially on the dorsal surfaces of the wrists. The face may also be the site of some pigmentation especially about the temples.

In children this disease is almost constantly associated with lymphoid enlargement and splenomegaly as was first pointed out by Still; this form sometimes occurs in adults. During the last ten years two such cases have come under my notice, both in men about forty years of age. In the first, a febrile condition of very long duration, the glands in both axillæ and groins were much enlarged and the spleen was felt below the costal margin. In the second patient who has suffered from rheumatoid arthritis for about ten years, the spleen reaches nearly to the umbilical level. In neither was there any characteristic change in the blood picture.

Clinical Features.

Some clinical features of the disease may be mentioned.

Fever.

Apart from the considerable pyrexia of an acute case, one sometimes encounters patients with a low grade of pyrexia which may last for months or even years. In the case of the first mentioned man with Still's type of the disease, the temperature rose to 37.3° C. or 37.8° C. (99.2° F. or 100° F.) every day for a period of eighteen months. In the search for an infective agent, cultures both aerobic and anaerobic were made from the blood, urine, joint fluid and enlarged glands, without any results. Inoculation of a guinea pig with the juice from an enlarged lymphatic gland was also without effect. A microscopical section of the gland showed simply a hyperplasia of the lymphoid tissues without any definite inflammatory reaction.

The Pulse.

In severe cases even of long standing and without fever the pulse is usually frequent and of low pressure. The cause for this is not clear.

Intestinal Symptoms.

These patients are often subject to attacks of diarrhœa without obvious cause. Sometimes in weakly subjects such an attack may be a grave danger.

The Teeth.

After the onset of an attack the patient's teeth may rapidly decay or the gums may recede and pyorrhœa result.

Pain.

It is remarkable how pain varies in intensity in different cases of apparently the same severity and in the same patient at different times. Sometimes it is mostly confined to joints actively affected, but in other cases it is lancinating and widespread in the limbs, like root pains or the lightning pains of tabes. This latter type may be present when there is apparently no spondylitis with irritation of nerve roots. Pain is usually worse at night.

The Joint.

When a joint is actively affected it may be slightly red, but frequently it remains pale. However, increased heat can generally be detected in

it by applying the palm of one's hand firmly and by feeling it for a few moments.

Joints which have been affected for some time and in which the capsule is slack, may fill up passively with fluid without any sign of active inflammation. After a few days the fluid disappears again. Such repeated filling may lead to great disablement, especially in the knees, owing to the stretching and relaxation of the ligaments.

Sweating.

Sweating of hands and feet, associated with feeble capillary circulation, is a characteristic feature.

Relationship to Spondylitis Deformans.

In nearly all severe cases the patients suffer from involvement of the inter-vertebral joints, but in some patients the disease seems to be confined to the spine.

Although in *spondylitis deformans* there is often bony outgrowth, I am convinced that this disease in young subjects is a variety of rheumatoid arthritis. It may be very acute. In a man of twenty-eight years after an acute febrile illness of some six or seven weeks the whole of the vertebral column was rigid. The neck was flexed and fixed owing to the patient having lain on his back with his head on two pillows. Spondylitis may be a family affection. Recently I saw two brothers, aged eighteen and twenty years, whose lumbar and lower thoracic vertebræ were quite immobile from this affection.

The lower vertebræ and hips also may be affected and this may lead to their fixation.

Diagnosis.

In a case of some years' standing, with characteristic deformities there is no difficulty. In early cases and in acute rheumatoid arthritis diagnosis may be difficult. The differentiation of acute rheumatoid arthritis and acute rheumatism may at first be hard to decide. It is important to remember the tendency of rheumatoid arthritis to affect smaller joints, many simultaneously. The spindle-shaped swelling soon appears. The joints are acutely tender, even more so than the rheumatic joint. The tendency in acute rheumatism is for one joint to improve, while another is getting worse. This is not the case in rheumatoid arthritis. The rapid response to sodium salicylate is characteristic of acute rheumatism alone.

Early cases with only one or two joints affected may be mistaken for gout or osteo-arthritis, when small joints are affected or for osteo-arthritis or some form of infective arthritis in the case of involvement of larger joints. Here we may briefly review the other forms of multiple arthritis.

In gout heredity, sex, age, the joints affected, their crimson colour, the short duration of the attack and the absence of residua of the characteristic kind are distinguishing features.

In gonorrhœal rheumatism the fasciæ and larger joints are chiefly affected. Prostatic massage in the male and examination of urethral and endocervical smears from the female are important.

In dysenteric arthritis a history of diarrhœa and special examination of fæces are very important. The knees are most often affected, small joints very seldom. Both amœbic and bacillary dysentery may be complicated by arthritis.

Arthritis from septic foci usually affects larger joints and the inter-vertebral joints. The inflammation is more persistent. The spindle-shaped swelling is less evident. The cartilage may be early affected. The disease tends to abate if the focus is successfully treated. Deformity is not so characteristic or inevitable in long-standing cases.

In osteo-arthritis grating may occur early and there is definite lipping of the articular margins. Heberden's nodes are present in most cases. "Poker back," due to senile vertebral osteo-arthritis occurs chiefly in old, hard-working people. "Typhoid spine" is more localized than *spondylitis deformans*.

Tuberculous dactylitis, rare in this country, may be confused with Still's disease in children.

Treatment.

Acute Forms.

Medical treatment in the acute forms consists in rest and good nursing.

The joints should be in the position of greatest ease and should be moved as little as possible. It is very important that the position should be one which allows the least disability in the event of the joint becoming immobile. Drugs are given to relieve pain. Acetyl salicylic acid is of the greatest value. It may be necessary to give opium, as Dover's powder, with "Barbitone" to promote sleep. Morphine should be avoided. Alkaline foments or a liniment of equal parts of camphor, chloral hydrate and menthol seem to give the greatest relief. Salicylate of soda is of little value.

Chronic and Sub-Acute Forms.

In chronic and sub-acute cases the joints which are not actively affected, should not be immobilized. Gentle passive or active movement is desirable and massage is of great value in maintaining the nutrition of the muscles. If movement is not acutely painful, I always encourage patients to move their limbs as freely as possible and to walk about. The relaxation of the tarsal joints often leads to flat foot and this must be suitably treated by insoles or a specially made shoe.

The diet should be nourishing and easily digested. No restrictions in regard to proteins or carbohydrates should be enjoined. It is of the utmost importance to maintain nutrition.

I know of no drug which has any affect on the disease itself, though it is often necessary to treat symptoms and sequelæ, such as pain, diarrhœa or secondary anæmia which is often present.

Possibly an exception to the statement that drugs are useless may be made in the case of thyreoid extract. In cases of long standing in afebrile patients without acceleration of the pulse I have seen improvement follow the administration of thyreoid up to 0.5 gramme daily, but it is difficult to be sure that the improvement was due to the drug, as the disease often abates spontaneously.

Protein Shock Therapy.

In recent years it had been noticed that vaccine therapy was of service in some cases. The bacteria injected were various and often mixed. In the case of "Phylacogen," a filtrate of a mixed culture was used. The results could not have been due to any specific action. When favourable, they were probably the result of protein shock. Of late years this phenomenon has been made use of by the intravenous injection of foreign protein. Dead bacteria are useful for this, because the dose is easily measured and the results constant in regard to the febrile reaction. This mode of treatment is certainly valuable in many cases, especially in my experience in early sub-acute ingravescent cases. I give thirty or forty millions of *Bacillus coli* or the mixed typhoid and para-typhoid *A* and *B* vaccine intravenously. The mouth temperature is taken every four hours for thirty-six hours after the injection. A rise to above 38.4° C. (101° F.) is aimed at. I give a dose at four to seven days' intervals. If benefit is derived after any dose up to the third, I persist with the treatment. If not, I relinquish it. I do not find it necessary to increase the dose to produce subsequent febrile reactions. In favourable cases great benefit results. The pains and swelling and other signs of activity diminish and may disappear. But in a few cases after apparent subsidence the disease has reappeared and the treatment has had to be repeated.

Conclusion.

I am well aware that I have said nothing that is new in regard to rheumatoid arthritis, but this malady is so widespread, so disabling to the patient and so baffling to the physician, that its exhaustive study is a duty to be faced by all workers in the field of practical medicine.

SOME CLINICAL EXAMPLES OF PHYSICAL AND MENTAL TESTING.

By Richard J. A. Berry, M.D., F.R.C.S. (Edinburgh),
Professor of Anatomy, University of Melbourne.

From a large number of cases which have come under my notice the following may be selected as illustrations of the value of physical and mental testing as an extension and adjunct to ordinary clinical examinations.

Low Grade Amentia.

Case I.—The patient is a boy, aged nine years and ten months, that is he is in the tenth year of life. He is an only child whose mother died when the boy was three years old. The father is still living.

As the clinical history was published in "The Transactions of the Australasian Medical Congress, Melbourne, 1923" (Supplement to The Medical Journal of Australia, June 7, 1924, page 393), it is only necessary to utilize this case as a means of demonstrating the actual physical measurements and mental tests employed and to furnish other cases as examples of the information to be derived therefrom.

Measurement of the boy's head gave the following results: Head length 187 millimetres, head breadth 140 millimetres, head height 138 millimetres. From these figures and the use of Lee's formula the cubic capacity of brain is calculated out at 1,378 cubic centimetres. As the boy is nine years and ten months old, he is in the tenth year of life. Reference is now made to the percentile table of cubic capacity, from which it is found that the boy falls between the 80 and 90 percentiles for State school boys, that is a direct comparison is established between this and normal boys of his own age and social standing. The 80 percentile for such normal boys is 1,349 cubic centimetres and the 90 percentile is 1,380 cubic centimetres, the difference between the two being 31 cubic centimetres, that is there is here a spacing between the unit percentiles of 3.1 cubic centimetres, calculation from which places the boy quite accurately at the 89 percentile, that is 39% more than the average of his age and sex. This figure falls within the upper range of possible abnormality and shows the boy to be macrocephalic with a head as big as that of the normal boy of sixteen years. The results of the three measurements of the head, as also of the calculation therefrom of the cubic capacity of brain, are entered on the chart. The percentile of the latter, 89, is also entered in the correct column and diagrammatically recorded in the graph as a dot.

The examiner next proceeds to take the standing stature, the sitting stature and the weight, records each observation on the chart, turns up the appropriate percentile tables and finds that the results for this boy are as follows:

Standing stature	1,249 millimetres	= percentile 23.
Sitting stature	707 millimetres	= percentile 61.
Weight	25 kilograms	= percentile 27.

The average of these physical measurements, that is the physical average, is obtained by adding the three percentiles together and dividing by three, which gives a quotient of 37. This last is recorded on the chart and entered on the graph.

The right grip, left grip and vital capacity are next taken with the appropriate instruments, the results recorded and the correct percentiles obtained from the corresponding tables with the following results:

Right grip	13 kilograms	= percentile 20.
Left grip	11 kilograms	= percentile 10.
Vital capacity,	950 cubic centimetres	= percentile 3.

The average of these three is the psycho-physical average, obtained as was the physical average, with the result 11. This last is again recorded on the graph.

The patient is next submitted to the Binet-Simon tests. The investigator commenced by asking the boy his age, which he did not know; therefore his intelligence was presumably not that of a normal five year old child and as a consequence the tests were immediately taken back to those of the four year old child. Of these he failed at the first one dealing with the comparative length of two lines

and is consequently taken right back to the tests of the normal three year old child. All these three years old tests which are of the utmost simplicity, he got quite correctly. The examiner then continued with the four year old tests. Proceeding with these tests in the order in which they are set forth in Terman's "The Measure of Intelligence," the patient failed to recognize the longer of the two lines (scores 0); he succeeded in the discrimination of seven out of ten geometrical forms which gives him a pass (scores two months); he succeeded in the counting of four pennies, the counting and pointing to the pennies coinciding (scores two months); he succeeded in copying the square (scores two months); he failed absolutely at the comprehension tests of: "What must you do when you are sleepy?" "What ought you to do when you are cold?" "What ought you to do when you are hungry?" (scores 0); he failed absolutely at the repetition of four digits (scores 0).

As the patient has succeeded with some of the four year old tests, the examiner proceeded with the five year old tests, at all of which the patient failed.

As this patient succeeded with all the three year old tests, he is credited with three years *plus* two months for each of the four year year old tests in which he succeeded, which gives a Binet-Simon mental age of three years and six months.

The Binet-Simon intelligence quotient for this case is, therefore, 35.6, obtained by dividing the mental age by the chronological age, thus:

$$\frac{3\ ^{6}/_{12}\text{ years}}{9\ ^{10}/_{12}\text{ years}} = \frac{42\text{ months}}{118\text{ months}} = 35.6\text{ intelligence quotient.}$$

The examiner next proceeded to test the patient's motor or effector reactions by means of the Porteus maze tests. Commencing with the three year old test in which the patient is asked to trace with his pencil the outline of a diamond-shaped figure and to keep his tracing within the narrow confines of the printed outlines provided, the boy succeeded. He neither passed out of the confines of the space provided nor did he cut off any of the angles of the diamond. He also succeeded with the four year old test. For the five year old test he only obtained half credit, because he passed the first allowable opening and went out at the second. He failed absolutely at the six and seven year old tests. The Porteus mental age is, therefore, four years and six months and the intelligence quotient obtained, as before, is 45.7.

In this case it was impossible to obtain the class age as the child is apparently uneducable and is not at school. When this information is obtainable, the class age represents the class or school grade in which the child is placed at school. It is a species of rather rule-of-thumb check on the Binet-Simon and Porteus mental ages and is of little significance in a medical examination. For this latter purpose the combined intelligence quotients obtained by adding together the Binet-Simon and Porteus intelligence quotients and dividing by two, is much more significant. In this case the combined intelligence quotient is 40.6 and all observers are agreed that when the combined intelligence quotient falls below 75, it is a fairly reliable diagnostic of retarded cerebral and mental development.

The Binet-Simon, Porteus and combined intelligence quotients, respectively, for this child, 35.6, 45.7 and 40.6, are entered on the chart and recorded on the graph.

On the graph lines are then drawn between the three dots expressive of the percentile position of this individual for cubic capacity of brain, physical average and psycho-physical average. Similar lines are drawn between the dots representing the three intelligence quotients. The graph is now completed and on every count, except the physical average, the individual is shown to be well outside the extensive range of variation allowed for normal variations from the mean and even this physical average is seen from comparison with the percentiles to be well below that of the average normal child of a corresponding age and social standing. The boy is thus proved to be a low grade ament of the imbecile type.

Neurone Defect in "Insanity."

In December, 1922, the medical superintendent of one of the mental hospitals, having heard of these investigations and being interested therein, asked that these methods should be applied to some of his patients. The invitation was accepted with the reservation that whilst it was doubtful if the methods would be generally applicable to such patients, they might possibly furnish some useful information. From the patients examined in this hospital the following may be instanced because she belongs to a class of patient who not infrequently finds his way into the consulting room.

Case II.—The patient is a female, aged twenty-two years and six months, that is to say, she is in the third decade of life. She was admitted to the Receiving House of the Lunacy Department on August 22, 1921, discharged thence as "relieved" on October 1, 1921, at the request of the mother. She was re-admitted on July 5, 1922, and has since been transferred to another mental hospital for more established cases.

When first seen at the receiving house she gave a history of freedom with boys without sexual satisfaction, ideas of unworthiness, remorse for her actions, some onanism. When she sees men she has a strong impulsive tendency to look at the region of the genitals.

Very unfortunately for herself this patient consulted, in the interval between her discharge from the receiving house and her re-admission, a lay psycho-analyst by whom she was "treated."

Doubtless any medical man will dismiss this patient as just a common lunatic. But what is lunacy? Is lunacy actually a disease of cortical neurones irrespective of their numbers or is it that mental reactions are so dependent on numbers of fully developed functioning neurones as to make the reactions of the under-neuroned individual appear quite normal to those similarly constituted and quite abnormal to those who have their full share of neurones? We cannot answer these questions because we do not know, but it certainly appears that many so-called cases of insanity are simply disordered reactions to the environment

from a deficiency or destruction or both of fully developed functioning neurones; this patient appears to be an example thereof.

In the tenth edition of Dorland's "Medical Dictionary" insanity is defined as "disorder of the mental faculties, more or less permanent in character, but without loss of consciousness and will. It is marked by delusions, illusions and hallucinations, by changes in character and habits and by unreasonable and purposeless actions and language." Then follow the definitions of more than fifty clinical varieties of insanity. If this definition may be accepted as being synonymous with disordered or abnormal reactions to the environment, it would appear as though the border line between sanity and insanity is not always capable of demarcation. If, however, attention be concentrated on this problem of the reaction to the environment, it is a neurological truth that every living animal is provided with a nervous system which is strictly adapted to its requirements, that is provision is made for those reactions to the animal's environment which best adapt it to the struggle for existence. When these reactions effect the purpose, they are "normal"; when they fail to effect the purpose, they are "abnormal." Man has attained his supreme position in the animal world entirely through the extraordinarily highly evolved mechanism of his brain and it is a universal law that for a high evolution there is a price to be paid. For example, the shoulder joint of man is the most highly evolved shoulder joint in the animal kingdom and the price to be paid is frequency of dislocation. No other animal pays such a price. Similarly with man's brain. So highly evolved is it that there is a price to be paid. That price is occasional failure to perform its proper functions of enabling man to react to his environment in a normal manner. Is this failure always to be called insanity? We do not know; but we are at least certain that no other animal is called upon to pay the price that man does. It appears, therefore, that abnormal reactions to the environment may be reached in man's case in a variety of ways.

Firstly it may be reached from actual disease of brain cells in a perfectly normally neuroned individual, as when general paralysis of the insane follows on syphilis. Here, as the neurones become destroyed there is a gradually increasing abnormal reaction to the environment and the condition, when sufficiently obvious, is called insanity.

Secondly it may be reached from an arrested development of cortical cells. Differences in the degree of the arrested development exist ranging from extreme cases, such as microcephalic idiocy, through all the grades of cerebral amentia, up to subnormality. As Mott says: "There is definite clinico-anatomical evidence of the inseparability of body and mind. Thus mental deficiency is associated with and proportional to the arrest of development of the supra-granular layer of pyramidal cells of the cerebral cortex." All these patients show in their behaviour a more or less abnormal reaction to the environment. The greater the deficiency in cortical cells, the more pronounced are the abnormal reactions. Are all such conditions to be classified as insanity? The present tendency appears to be to call the persons with lower grade defects, that is those in whom the deficiency of cortical cells is most definite, insane, because their reactions to the environment depart so much from the normal as to be obvious to everybody. The milder degrees of cortical deficiency, on the other hand, are apparently not regarded as constituting insanity. This position appears to be scientifically untenable and illogical. It is only a question of degree and either all such individuals are lunatics or none of them are.

Thirdly it may be reached from a natural destruction of cortical cells as may occur in every human individual and is indeed a perfectly natural attendant on senility and gives, of course, abnormal reactions to the environment in an individual who previously has reacted perfectly normally. When this occurs in elderly persons it is regarded as a normal process. When it occurs in younger individuals it is called insanity and classified as *dementia præcox*.

Fourthly it may be reached from "ill-health" of the cortical neurones in a previously normally developed individual with his full share of neurones, who has previously reacted quite normally to his environment. Under these conditions of "ill-health" of the cortical neurones the reactions to the environment become so profoundly altered, sometimes temporarily, sometimes permanently, as to cause considerable difficulty in saying when such persons are to be regarded as insane and when not. Further, these conditions of "ill-health" of the cortical neurones may occur in any individual, irrespective of the number of his neurones and so become grafted on to amentia or genius. The reactions to the environment become thus still further modified and lead to still greater difficulty in the classification of the condition.

The causes of this condition of "ill-health" of the cortical neurones, that is chromatolysis, are very numerous. Some of them are well known, others can only be guessed at and of others again little or nothing is known.

Of the effects of this "ill-health" of the neurones, however produced, there are numerous examples in medicine. To mention but a few, in all of which, however, the reactions to the environment are so profoundly altered as to make it difficult to know when the narrow line of demarcation between sanity and insanity is crossed, there are:

Delirium in acute fever,
Acute mania after an anæsthetic,
Delirium tremens,

Climacteric insanity; here apparently the reactions to the environment depart so profoundly from the normal as to cause it to be classified as an "insanity";

Drug insanity,
Night terrors from a deprivation of oxygen,
Menstrual insanity,
Puerperal insanity,

Shell shock and many others not regarded as insanity.

It has been necessary to make this digression in the case of the girl whose case is now under discussion, because it is just one of those cases where this difficulty arises. Is the girl really insane or not? She certainly displays the most pronounced altered reactions to her environment and the special examination made of her did not give altogether conclusive results.

The physical and mental data of this girl are as follows:

Head length	182 millimetres.
Head breadth	145 millimetres.
Head height	124 millimetres.
Cubic capacity	1,279 cubic centimetres = 26 percentile.
Standing stature ..	1,648 millimetres.
Sitting stature	824 millimetres.
Weight	50 kilograms.
Physical average	43 percentile.
Right grip	30 kilograms.
Left grip	20 kilograms.
Vital capacity	2,500 cubic centimetres.
Psycho-physical average	27 percentile.
Binet-Simon age	13 2/12 years, 82 intelligence quotient.
Porteus age ..	12 6/12 years, 78 intelligence quotient.
Combined intelligence quotient, 80.	

The results in this case are at first sight perhaps rather inconclusive. On every count the girl appears within the allowed range of variation. Closer scrutiny shows, however, that all data with one exception, are about 20% below normal. The percentiles are the result of actual measurement, whereas the range of normal variation is a mathematical standard arrived at by statistical science. Is any inference to be drawn then from the observations in this case, when read with the clinical history? If the reader thinks not, he is entitled to his opinion. It is, however, permissible to assume that the special examination strongly suggests that this girl was under-neuroned from the start and is now suffering in addition from a lack of durability or even local destruction of the remaining brain cells she possesses. What influence the psychoanalysis had, it is impossible to say, but attention may be drawn to a statement of Sir Frederick Mott: "Great care must be taken (in the use of psychotherapy in medicine) not to put into the mind ideas of sexual perversion."

The Dangers of Establishing a Diagnosis of Mental Subnormality on One Test Alone.

It has long been well known that notwithstanding that twins frequently proceed at equal rates in their physical growth, such is by no means the case with their cerebral development, even when the environment has been exactly the same in both cases. Further it is only too frequently the practice, especially amongst laymen, to establish a diagnosis of cerebral amentia on a Binet-Simon intelligence quotient of 70 or less. As Porteus remarks: "A Binet intelligence quotient of 70 or less may be regarded as the first presumptive evidence of feeble-mindedness, but by no means as a final diagnostic proof. Though this is almost universally conceded, yet we find study after study, presumably directed towards the problem of what does and does not constitute feeble-mindedness, quoting a Stanford-Binet intelligence quotient as if it were quite adequate to determine the status of the subjects of the investigation. The practice appears to be on all hands to repudiate such a method of diagnosis and just as generally to adopt it."

Whatever the practice may be amongst laymen and it is to be feared that Porteus's remarks are only too true, the procedure is quite inadmissible in medical practice. No medical man has either right or justification in establishing a diagnosis of mental subnormality on a Binet-Simon or other single test alone. The cases of twin sisters emphasize these points.

CASES III. AND IV.—The girls are twins, aged fifteen years and four months, that is are in the sixteenth year of life. They were from the same institution and as the authorities could not understand the differences presented by the sisters, they asked me to examine them, with the results briefly set forth below:

	I.L.	M.L.
Cubic capacity brain..	86 percentile.	61 percentile.
Physical average ..	12 percentile.	4 percentile.
Psycho-physical average	74 percentile.	13 percentile.
Binet intelligence quotient	71 ..	50
Porteus intelligence quotient	100 ..	32
Combined intelligence quotient	85.5 ..	41

Had these girls been examined by the Binet test alone, it is not improbable that both would have been returned as "feeble-minded" and a grave injustice would have been done in the case of I.L..

Both sisters are of small bodily physique and of the big-headed type. I.L. is a not unintelligent child whose comparative failure at the Binet tests, is due to lack of educational opportunities. M.L., on the other hand, is an ament. The authorities were advised to give I.L. extended educational facilities and this advise has been followed with the happiest results. As regards the sister, a benevolent control seemed to be indicated. She has, therefore, been retained in the institution and under the relatively simple environment in which she there finds herself, is making herself both useful and happy.

Moral Delinquency.

CASE V.—The patient is a girl, aged eleven years and eight months, that is she is in the twelfth year of life. She was taken to a children's specialist with the following story.

The child was apparently quite a normal child until about the age of six years, when she developed a habit of stealing anything she could lay her hands on, whether of value or not. It was also noticed that she was not truthful. These thieving and lying propensities gradually became more pronounced and are now the source of much trouble with her neighbours, so much so indeed that the mother has been compelled to leave one residence after another on account of the child's propensities. The child has been in six convent schools and has always been reported as incorrigible and has had to be taken away. In other respects the child is normal, is clean in her habits, very affectionate and good hearted and quite penitent for the moment and when found out in her delinquencies, but "does it again."

The specialist in question requested me to make an examination of the child. I found on directing inquiry first along the lines of any possible causes of cerebral under-development, that the child was the offspring of a first pregnancy when the mother was about sixteen to seventeen years of age, the child being born in wedlock. The labour was difficult and a forceps delivery, The mother herself thinks the labour may have affected the

child's head. The infant was fed from birth on condensed milk, no cow's milk being available. There is no history of any delayed acquisition of speech, nor of any abnormalities in the processes of dentition or walking. The subsequent marital relations of husband and wife, though of a distressing character on the father's side, have no bearings on this case from the mental standpoint.

The child suffered from an attack of diphtheria at the age of seven years and six months, developed post-diphtheric paralysis of the legs with an affection of speech. Prior to this illness the mother is of opinion that the child was mischievous only, but that afterwards habits of theft and lying developed.

Directing the next line of inquiry to the hereditary history, I learned from the mother that there is "a distinct mental history" on the father's side. She states that her husband was a "waster," was "light-fingered" and would steal spoons and other things from restaurants. The son of one of his sisters is "mentally defective." Another nephew is deaf and dumb and is in an institution. His father was an alcoholic and "would go mad when he was drunk." The husband himself, though fairly reasonable when sober, was violent and unreliable when drunk and had such a small head that he had to have his hats specially made. The mother now recognizes the error she made in marrying such a man and has since left him.

As regards the child the mother complains of the propensities already set forth. In one city the police were after the child four times for theft. On one occasion she stole a bicycle, left it at a street corner and eventually denied all knowledge of the transaction. There is, as yet, no obtainable history of any sex proclivities, but she gets very angry if her younger brother comes into the room when she is dressing.

As regards the child's good points it is stated that she is quite good at needle-work and is "as good as the mother at house-work." She can recite and sing a little and has been taught step-dancing, at which she is passably good. She is of a kind-hearted disposition, affectionate and loving, clean in her person, but an incorrigible liar and thief.

From her diagnosis chart the child is found to be very small-headed and of poor physique. She has the average sized head of a child of about five years, that is, there is seven years' retardation. Her bodily physique is that of a normal child of nine years, two years' retardation. Her psycho-physical average is also below normal, though not so much so as the other observations. The Binet tests give a mental age of eight years, that is a retardation of three years and eight months and an intelligence quotient of 68.6. The Porteus tests show a slight advance over the chronological age, with a mental age of twelve years and six months and an intelligence quotient of 107. The class age is nine years and the combined Binet-Porteus intelligence quotient is 86.8. An actual and fairly serious retardation is thus shown on every count, except the Porteus age.

From this examination it may reasonably be inferred that we are here dealing with an ament of the small-headed type, in whom the animal instincts from an infra-granular cortex are quite well developed, but over which there is insufficient inhibition from an under-developed supra-granular cortex, as is shown by the clinical history supported by the small head and corroborated by the Binet tests. These last bring out the facts that the child has little or no moral sense, has not the memory of a normal nine year old child, has a limited speech vocabulary and has no stereognostic sense. Notwithstanding the higher reading obtained by the Porteus maze tests it was clear that the child is apt to lose sight of the end in view.

It will be remembered that the functions of the infra-granular cortex are, broadly speaking, those of acquisition, that is of acquisition of those things essential to life and the species, namely food and sex. Man is the only animal with a supra-granular cortex sufficiently well developed to enable him to inhibit these reactions. Consequent on the greatly extended range of the infra-granular cortex in man the animal property of acquisition assumes many diverse forms, either the taking of the actual thing or its human representative, money. With an insufficiently developed controlling supra-granular cortex, the individual, given the environment, tends to react on this animal basis of acquisition, hence it may be very generally stated that individuals of this character are apt to display anti-social reactions against either human property or the human person or both. This child is, as yet, too young to make any prognosis possible as to future anti-social reactions of sex, but as regards anti-social reactions against property they are only too well established and the examination brings out the reason why: an insufficiently developed supra-granular cortex of control. As this is clearly under-developed, it is useless to attempt moral suasion or to punish the child for her lapses and it is equally useless to expect any therapeutic treatment to put brain cells where Nature has denied them. The child requires constant guardianship by either the relatives or the State. If the State refuses this duty, then from this child there can only be expected anti-social reactions against its established laws and usages, which are those laid down by normal people for normal people. Present day folly consists in still expecting the abnormal, of whom there are more outside institutions than in them, to react on normal planes of control and inhibition.

OMENTOPEXY.

By D. P. O'BRIEN, M.B., B.Ch., B.A.O., F.R.C.S. (Ireland),
Honorary Surgeon, Rockhampton Hospital, Queensland.

MANY attempts have been made to utilize the peritoneum with a view to draining ascitic fluid into the lymphatic system and owing to the nature of these operations, they are termed "Omentopexy." I need not enter into their history or describe them in detail for the following reasons. They left bands around which coils of intestine might become strangulated. The bands themselves whereby the drainage was affected tended to become more and more fibrous and attenuated and eventually lost the power of carrying fluid from within the peritoneal cavity to the subperitoneal space. The type of patient suitable for this operation is not very common and it was not until the winter of 1912 that I found one and I have not met another entirely suited since then. The case itself is of interest apart from the operation. I will therefore describe it.

I received an urgent call about mid-day to J.B., aged thirty years, an employee in the railway service, who stated that three hours earlier while at work he had been seized with sudden violent pain

in the abdomen. He was taken at once by the ambulance to his lodging where he vomited mucus and blood several times. His bowels acted three times, the motions consisting of fæces and blood at first and subsequently of very black pure blood. Previous to this attack he had had no serious illness and the family history disclosed nothing of consequence. He lay curled up in bed in a profuse cold perspiration, groaning with pain. His face and hands were greyish blue and the pulse was irregular and thready. He exhibited the signs of profound shock, nevertheless, the prostration was not of the type seen in perforation of one of the abdominal hollow viscera. It was not very profound nor was there any history of causative injury or previous symptoms of gastric or duodenal ulcer and he had eaten nothing for some hours before the attack. The abdomen was distended, immovable, rigid and tender all over, making his breathing very jerky and short. He had passed urine naturally at the time of the action of the bowels and I could not obtain a specimen, but albumin was found later on for a time on account of the conditions developing.

The lungs and heart were normal, the temperature was subnormal. It pained him very much to move from the position he was in with his legs drawn up in a semi-sitting posture. I had him at once conveyed carefully to the General Hospital by the ambulance. Here the appendix was removed by the Medical Superintendent, Dr. Buchanan, who informed me that it looked normal; there were no adhesions noticed. The patient rallied, the pain gradually eased off and during the next three weeks the temperature remained normal and the wound healed by first intention, but the abdomen remained distended and gradually filled with liquid. It had been tapped three times (nine weeks after the operation) with intervals of about ten days. The tapping was performed owing to great distension causing interference with breathing and fluid was removed, amounting each time to several litres. I saw him again at the request of the medical superintendent in the tenth week. The temperature was normal, the pulse regular and fairly strong, the respiration was rapid, the heart and lungs were normal, the abdomen was very distended with fluid, the legs were œdematous and there was general wasting.

With the kind permission of the Medical Superintendent, Dr. Buchanan, I decided to operate. Dr. Buchanan and the late Dr. Church assisted. Dr. Stuart administered the anæsthetic. I was led to devise an entirely new type of omentopexy by the fact that the leading anatomists and histologists have asserted that the sub-peritoneal space and particularly its parietal region is in direct communication with the lymphatic system. It is well known that the free aspect of the peritoneum is possessed of extraordinary osmotic properties.

Knowing this and assuming that the sub-peritoneal aspect opens directly into the lymphatic channels, we had the means of draining the ascitic fluid by the said vessels into the general circulation. The great omentum was utilized for that purpose in the following manner.

When the abdomen was opened by a vertical incision ten centimetres (four inches) in length close to the left side of the umbilicus, a large amount of clear pale fluid was allowed to flow out. Part of the remainder was mopped up with sponges. There still remained in the cavity perhaps a litre which I did not think necessary to evacuate. Careful but brief search was made for anything abnormal in the abdominal cavity. No adhesions, peritonitis, ulcers or cysts were found. The intestines were collapsed and pale, the omentum was thin with scarcely any fat. The latter and the adjacent portion of the transverse colon were lifted outside the abdomen on to hot towels and spread out. A vertical incision 12.5 centimetres (five inches) in length beginning 2.5 centimetres below the transverse colon was made in an avascular portion of the omentum going through its anterior layer. Through this incision the two layers were separated, a pocket large enough to contain the whole of that part of it below the end of the incision distal to the transverse colon was left, the said part was invaginated into the pocket. A catgut suture was inserted, closing the edges of the incision and uniting them with the underlying invaginated portion in its upper half. The lips of the incision in the lower half were united to adjacent invaginating omentum. A few more single relaxation sutures of catgut were placed between the invaginated bend and the upper portion of the omentum, making it impossible that it could become evaginated. All large vessels were carefully avoided. Owing to the absence of fat before alluded to, there was no difficulty in placing the free half of the omentum between the layers of its attached half. There was practically no hæmorrhage and no tension of any of the sutures.

During the stitching large vessels were easily avoided owing to the thin and translucent condition of the membrane. After being swabbed with hot saline solution it was returned to the abdomen and the abdominal wall was closed in the usual manner. It healed by first intention. A week afterwards there was no evidence of ascitic fluid and there has been none since. The œdema of the legs disappeared also and did not return.

Convalescence was uneventful and the patient was walking about in three weeks. He has been working in the railway without further trouble of any kind up to the present. Some photographs were taken two years after the operation and they show three large tortuous veins on each lateral aspect of the abdomen. Several other large veins were visible running up the back from the lower extremities and from around the anus.

The question arises: What was the cause of the sudden onset and subsequent events? I submit that the feasible and efficient diagnosis is to be found in thrombosis of the inferior *vena cava*, the upper limit of the thrombus being below the entrance of the renal and superior mesenteric veins. During the past two years two cases of thrombosis of the *vena cava*, both fatal, were recorded in *The British Medical Journal* under the epitome of current medical literature. *Post mortem* examination

in each instance confirmed the diagnosis. In support of this there were the sudden onset, the intense shock, collapse and pain in the abdomen, the vomiting and passing of black blood quickly followed by striking evidence of obstructed circulation in the veins of the abdomen and the lower extremities together with the enormous and continued exudation into the peritoneal cavity. The immensely distended collateral circulation from the lower extremities was amply sufficient to take the place of the obstructed *vena cava*.

When I saw the patient recently, this secondary circulation was still evident as it had been earlier and it was still as efficient. It does not appear that the thrombus became tunnelled again as it sometimes does nor was there evidence at any time that clots reached the heart or lodged elsewhere, an accident which might have terminated fatally in various ways.

From the foregoing description it will be evident that the efficiency of the operation must remain permanent and that there is no likelihood of any harmful complications. There are practically no dangers or after ill-effects.

It would suit any other type of ascites in which the object to be attained was the drainage of the fluid into the system, provided there was no disease present in other organs likely to lead to an early fatal termination *per se*.

It would also be useful as a temporary measure instead of tapping when the patient's condition in other respects permitted the performance of an abdominal section.

The operation I submit has three cardinal features, namely efficiency, permanence and absence of after complications. All three of these were fully proven by the great amount of fluid to be transfused from the peritoneal cavity to the lymphatics and the period of time which has elapsed since operation, namely twelve years, during which he has continued his work in the railway service.

Reports of Cases.

TWO CASES OF DIABETES MELLITUS.[1]

By J. H. HALLIDAY, M.B., Ch.M. (Sydney),
Resident Medical Officer, The Coast Hospital, Sydney.

THE two following clinical histories are regarded as of sufficient interest to be reported in full.

Case I.

J.C., a female patient, aged fourteen years, was admitted to the Coast Hospital on April 24, 1924.

The history given at the time of admission was that the child had been treated in Griffith Hospital for eighteen months. She had made moderate progress under a treatment of "strict diet." After return to her home she became very thin and ill after an intervals of three months.

The patient on admission was extremely emaciated. Examination of the respiratory system failed to reveal any abnormality. The cardiac dulness was within normal limits, the heart sounds were clear and their tone and quality were moderately good. The reflexes were normal. The tongue was furred and the condition of the teeth was not good. The abdomen was scaphoid in shape, but no abnormality could be detected. The reaction of the urine was acid, its specific gravity was 1020. A faint cloud of albumin was found and there were also much sugar and diacetic acid. The patient was not weighed on admission.

On April 25, 1924, a diet of black tea, coffee and broth was given.

On April 26, 1924, the blood sugar was estimated to be 0.265% and the urinary sugar to be 1.6%. The patient was given Allen's third day diet with ten units of "Insulin" three times a day a quarter of an hour before meals.

On April 28, 1924, the urine was sugar free and the patient was very hungry. Allen's fifth day diet was given.

On May 11, 1924, the blood sugar was 0.117% and some diacetic acid was still present.

On May 21, 1924, the following diet was given, the food being weighed after it was cooked:

Breakfast:
- Tea with cream, fifteen cubic centimetres (half an ounce);
- Egg, one only;
- Bacon, thirty grammes (one ounce);
- Butter, fifteen grammes (half an ounce).

Dinner:
- Broth;
- Tea with cream, fifteen cubic centimetres;
- Fish, ninety grammes (three ounces);
- Vegetables (5%), one hundred and twenty grammes (four ounces);
- Olive oil, fifteen cubic centimetres.

Tea:
- Broth;
- Tea and Cream, fifteen cubic centimetres;
- Vegetables (5%), one hundred and eighty grammes (six ounces);
- Olive oil, thirty cubic centimetres.

The food value of this diet was 1,000 calories. It was composed of ten grammes of carbo-hydrate, twenty-six grammes of protein and 95.5 grammes of fat. In other words the carbo-hydrate value was thirty-five grammes.

On May 22, 1924, the diet was slightly increased, the urine was still sugar free.

From June 12, 1924, the patient's blood sugar and weight were recorded each week. The weight on this day was 30.48 kilograms (four stone, eleven and three-quarter pounds).

On June 30, 1924, there was no evidence of ketonuria. The child was looking and feeling much better. The diet was being gradually increased and the "Insulin" dosage was being regulated. This is well shown on the accompanying chart (see Figure I.).

On September 22, 1924, the patient was having twenty units of "Insulin" before breakfast. The diet represented 1,600 calories. It contained twenty-three grammes of carbo-hydrate, seventy grammes of protein and one hundred and thirty-seven grammes of fat. In other words the carbo-hydrate value was seventy-seven grammes. The child by this time was up all day long. she felt very well, no diacetic acid or acetone was present in the urine and the blood sugar was 0.14%. The weight was 36.9 kilograms (five stone, twelve pounds).

At the present time (October 9, 1924), the patient's diet is as follows:

Breakfast:
- Tea with cream, fifteen cubic centimetres;
- Eggs, one only;
- Bacon, forty-five grammes;
- Brown bread, thirty grammes;
- Vegetables (5%), one hundred and eighty grammes;

(Twenty units of "Insulin" are given a quarter of an hour before the meal.)

[1] The patients who are the subjects of this report, were shown at a meeting of the New South Wales Branch of the British Medical Association on October 9, 1924.

Dinner:
Broth;
Fish or chicken, one hundred and twenty grammes;
Vegetables (5%), one hundred and twenty grammes;
Meat, ninety grammes;
Tea with cream, fifteen cubic centimetres;
Olive oil, thirty cubic centimetres.

Tea:
Broth;
Eggs, two only;
Bacon, thirty grammes;
Vegetables (5%), one hundred and eighty grammes;
Tea with cream, fifteen cubic centimetres;
Olive oil, thirty cubic centimetres.

Case II.

C.B.B., female, aged fourteen and a half years, was admitted to the Coast Hospital on July 3, 1924. She brought a note from Dr. Newton in which it was stated that she was suffering from diabetes, was on strict diet, but was going down hill. The history obtained was that a feeling of tiredness had been present for three weeks. Increased appetite, great thirst and an increase in the amount of urine had been noticed for three months. The patient had lost a lot of weight. She had suffered from diphtheria at the age of thirteen months.

Examination on admission revealed that the patient was dull and heavy lidded, her face was pale and she answered questions with some difficulty. The respiratory excursion was increased. The patient was very thin, her skin appeared to hang loosely. The tongue was brown and dry. The pulse was rapid, soft and regular. Nothing abnormal was detected on examination of the chest. The specific gravity of the urine was 1025, its reaction was acid and a faint cloud of albumin was present. The urine also contained much sugar and diacetic acid. The patient's weight was 29.25 kilograms (sixty-five pounds). Black coffee and drinks of bicarbonate of soda and water were ordered until the following morning.

On July 4, 1924, the child's condition had slightly improved. The blood sugar was 0.195% at 12.20 o'clock p.m..

On July 5, 1924, the following diet was ordered:

Breakfast:
Tea with cream, fifteen cubic centimetres;
Eggs, one only;
Bacon, thirty grammes;
Butter, fifteen grammes.

Dinner:
Broth, one cup;
Tea and cream, fifteen cubic centimetres;
Fish, sixty grammes;
Vegetables (5%), one hundred and twenty grammes;
Olive oil, fifteen cubic centimetres.

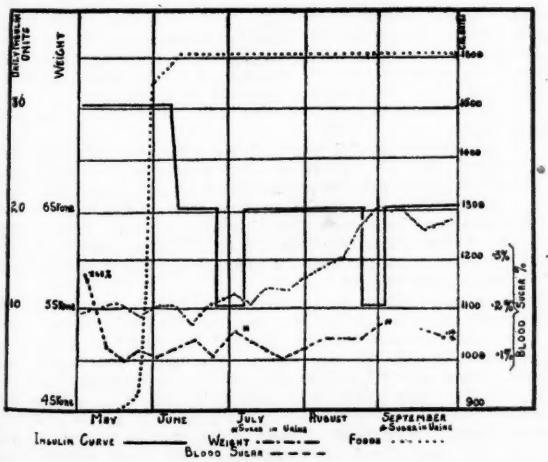

FIGURE I.

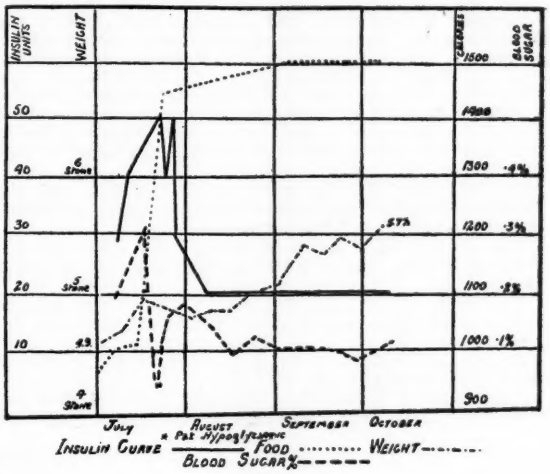

FIGURE II.

Tea:
Broth, one cup;
Tea and cream, fifteen cubic centimetres;
Vegetables (5%), one hundred and eighty grammes;
Olive oil, fifteen cubic centimetres.

This diet represented 1,000 calories and was composed of ten grammes of carbo-hydrate, twenty-one grammes of protein and 95.5 grammes of fat. In other words the carbo-hydrate value was thirty grammes. Fifty units of "Insulin" were given daily, ten units fifteen minutes before breakfast, twenty units before dinner and twenty units before tea.

On July 6, 1924, it was noted that the glycosuria was less and the dosage of "Insulin" was reduced to ten units before each of the three meals.

On July 7, 1924, the urinary sugar was increased in amount and the blood sugar was 0.31%. The "Insulin" dosage was increased to forty units daily, ten before breakfast, twenty before dinner and ten before tea.

On July 9, 1924, the urine still contained much sugar and diacetic acid. The "Insulin" was increased to fifty units, ten before breakfast, twenty before dinner and twenty before tea.

On the morning of July 13, 1924, the urine was sugar free. The dosage of "Insulin" was altered so that ten units were given before breakfast, twenty before dinner and ten before tea. Dinner was increased by the addition of sixty grammes of 5% vegetables and the same quantity of fish.

On July 15, 1924, sugar appeared again in the urine. The dosage of "Insulin" was increased to ten units before breakfast, twenty before dinner and twenty before tea. At eight o'clock p.m. on the same day the patient became very drowsy and quiet. She was unable to answer questions. The respirations were shallow and quiet. The limbs were flaccid. The pupils were widely dilated and the eyes were glassy in appearance. A specimen of urine obtained by means of a catheter were found to be sugar free.

Ten cubic centimetres of a 50% solution of glucose in normal saline solution were given intravenously. Orange juice was given by mouth and 0.3 cubic centimetre of adrenalin was given by hypodermic injection. In about one minute the patient was much brighter and talked freely and rationally. She had no recollection of having been moved. She said that she had begun to feel drowsy soon after tea. This is an example of the effect of a large dose of "Insulin" at the end of a day.

On the morning of July 16, 1924, the urine was sugar free and the dosage of "Insulin" ordered was twenty units before breakfast, ten before dinner and ten before tea.

On July 17, 1924, the urine was sugar free, but a trace of acetone was detected. The following were added to the dinner menu: Bread, fifteen grammes; butter, fifteen grammes. To the food taken at tea time were added the same quantity of bread and thirty grammes of butter. The diet at this time contained twenty-seven grammes of carbohyrate, forty-seven grammes of protein and one hundred and thirty grammes of fat. The carbo-hydrate value of this diet was sixty-seven grammes and the caloric value 1,470.

On July 19, 1924, the urine was sugar free and the dosage of "Insulin" ordered was ten units before breakfast, ten before dinner and ten before tea.

On July 22, 1924, the blood sugar was 0.141% and the patient's weight was 30.37 kilograms (sixty-seven and a half pounds).

On August 12, 1924, the dosage of "Insulin" was reduced to ten units before breakfast and ten units before tea.

On August 18, 1924, the blood sugar was 0.124%.

On September 2, 1924, the blood sugar was 0.100% and the patient was gaining weight.

On October 3, 1924, the blood sugar was still at a low level, the patient was up and about and was feeling well. She was steadily gaining weight.

At the present time (October 8, 1924) the diet is as follows:

Breakfast:
- Tea with cream, fifteen cubic centimetres;
- Eggs, one only;
- Bacon, thirty grammes;
- Bread, thirty grammes;
- Butter, thirty grammes.

Dinner:
- Broth, one cup;
- Tea with cream, fifteen cubic centimetres;
- Vegetables (5%), one hundred and eighty grammes;
- Chicken, ninety grammes or fish, one hundred and twenty grammes;
- Bread, fifteen grammes;
- Olive oil, fifteen cubic centimetres.

Tea:
- Broth, one cup;
- Tea with cream, fifteen cubic centimetres;
- Vegetables (5%), one hundred and eighty grammes;
- Bread, fifteen grammes;
- Butter, thirty grammes;
- Eggs, one only;
- Olive oil, thirty cubic centimetres.

The accompanying chart (see Figure II.) shows clearly the progress made by the patient and the result of the treatment.

AN INTERESTING CASE OF ECTOPIC PREGNANCY.

By R. MURRAY BUNTINE, M.B., B.S. (Melbourne),
Korumburra, Victoria.

I REGARD the report of the following case justified on account of the very interesting article by Dr. Herbert Schlink in this journal some months ago to which this is a sequel.

Mrs. C., aged thirty-two years, married, has eleven children living. The eldest is sixteen years old and the youngest fourteen months old. Health had been good till ten months ago, when she had a right tubal pregnancy removed at the Women's Hospital, Melbourne.

She had been separated from her husband for a year on his return from the war owing to his having had syphilis. They again cohabited on his producing a certificate of cure. The serum of neither at the present time yields a reaction to the Wassermann test. The last child was born since the reunion and was four months old at the time of the previous operation.

I first saw her two months ago. She had not completely recovered from the operation as she had always felt a "weight" in the pelvis. She complained of "weight" in the pelvis and "backache" with dull pain in the right iliac fossa. Menstruation had been regular since the operation nine months before. There was no nausea. The action of the bowels was regular, the temperature was 36.6° C. (97.8° F.) and the pulse rate was 84. The urine contained no albumin and no sugar.

On examination the patient was found to be a well nourished woman. An abdominal scar of previous operation was present. There was tenderness in the left iliac fossa low down. On vaginal examination, tenderness was found in the left fornix, no mass was felt, the uterus was retroverted and slight blood-stained discharge was present. She went home with a provisional diagnosis of threatened abortion after the insertion of a pessary to correct the backward displacement. She was told to rest. Fourteen days later she returned as the discharge had commenced again and several "pieces of flesh" had come away. The pain was better.

I curetted her at once and obtained only several small pieces of decidual membrane. As an ectopic pregnancy was suspected, I then opened the abdomen. A mid-line incision was made below the umbilicus. A pregnancy of the left tube was present. This was removed with the whole tube including the intra-mural portion. Ventral fixation of the uterus was performed and the abdomen was closed. Recovery was uneventful and the patient is now assisting with the home.

The points of interest are: (i.) The *corpus luteum* was on the same side as the tubal pregnancy; (ii.) the second ectopic pregnancy occurred nine months after the first; (iii.) the removal of the right tube had weakened the supports of the uterus allowing it to fall back and become retroverted.

A CASE OF ACUTE PNEUMONIC TUBERCULOSIS.

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ACUTE tuberculosis in adults is not rare, but from a clinical as well as from an epidemiological point of view the following case seems worth recording.

In July of this year I was attending M.L., aged forty-seven years, a married man, suffering from bronchitis. He had been ill for ten days previously, with a hacking cough. Except for an attack of broncho-pneumonia when three years old he had had no previous illnesses and until three days before had been actively carrying on his business. This involved a fair consumption of alcohol. One sister had suffered from pulmonary tuberculosis, but had recovered. The rest of his family history contained nothing of importance.

He was a stout, florid man with no pyrexia. He was not dyspnœic and the pulse rate was 80 in the minute. On examination numerous rhonchi were heard in both lungs with harsh vesicular breathing. There were no crepitations and percussion revealed resonance throughout. He was coughing up a small amount of white frothy sputum. His systolic blood pressure was 160 millimetres of mercury and the diastolic pressure was 100. The urine was not abnormal.

After an uneventful period his cough had not quite disappeared in a fortnight. An occasional post-tussive rhonchus and some muco-purulent morning sputum also persisted. But his condition was good. His wife stated that she had not seen him looking so well for a long time. It was deemed advisable for him to have a change of air as soon as possible. These details are given in view of subsequent events.

Four days later, on August 13, 1924, I was called in urgently to see the patient again. He had taken a car ride the afternoon before. He felt "shivery" on returning and was unable to get warm. He had slept badly and felt "very nervy." His temperature was then 39.4° C. (103° F.), his pulse rate was 118 and his respirations numbered 30 in the minute. Finding only a few sibili in his chest, I concluded he had contracted influenza. Next day he complained of headache. His temperature was 38.4° C. (101° F.) and the chest condition was unaltered.

On August 15, 1924, his temperature, pulse and respirations were the same as on August 13. He was very excited and restless and had slept very little. Examination revealed a deficient percussion note at the right base and scattered rhonchi, but nothing else abnormal.

On August 16, 1924, Dr. G. R. P. Hall saw the patient in consultation with me. He had now in addition weak breath sounds at his right base and on the signs a diagnosis of pneumonic influenza was made. From here the four-hourly temperature chart, published herewith, was kept.

Events were now happening rapidly and revealed a continual spread of the inflammatory process. On August 17, 1924, he had definite lobar pneumonia, with bronchial breathing and bronchophony and typical tenacious mucoid sputum. By August 18, 1924, he looked very ill and had severe pain in the right side, explained by the presence in the axilla of a friction rub. For the previous two days he had been able to speak only in a whisper. His systolic blood pressure was 150 millimetres of mercury, only ten below his normal level and his colour remained good. Sleep was being insured by the administration of morphine. Sputum was now rusty.

By August 21, 1924, the friction rub was gone, there was a wooden dulness at the right base and breath sounds were absent. For the first time sputum was greenish, purulent and offensive, but still scanty. His chest was explored next day and a small quantity of blood-stained fluid withdrawn, but no pus. Œdema of the feet and abdominal distension were now present. Here I became suspicious, though a crisis was not yet overdue and a specimen of sputum was sent to the Board of Health on August 22, 1924, the eleventh day of the illness, for examination. After careful search the micro-biologist reported the presence therein, together with a great variety of other micro-organisms, of tubercle bacilli. Our worst fears were confirmed.

The end came surprisingly rapidly; the heavy sweats, the urgent dyspnœa, the rapid emaciation quickly dispelled any hopes. The sputum became more copious, grey and exceedingly offensive. Signs of breaking down appeared at the right base, with crepitations at the base of the left lung (terminal œdema). The apices remained clear.

After twelve hours' semi-consciousness the end came on August 26, 1924, fourteen days after the onset of the acute illness.

The points to note are:

1. The deceptive prodromal stage, if such indeed it was, of three weeks' bronchitis and the absence of anything previous to this.

2. The appearance of green fœtid sputum and œdema of the feet and a temperature swinging several degrees suggested the presence of tubercle bacilli. They are, however, rarely found before the end of a month.[1]

3. The extremely rapid course of the disease. The majority, according to Osler, "drag on until the third month"; nor is it inevitably fatal.[2] Had it not been for the sputum examination, this would have been considered a case of pneumonia, influenzal or otherwise, going on to suppuration and death.

4. Most important, from a public health point of view, was the finding of tubercle bacilli in the sputum of a patient clinically suffering from lobar pneumonia. The patient had a family of growing children and he was attended by two nurses, all of whom were liable to infection. By precautions taken at the time and by care in the future I hope this danger will be averted. In addition, the necessary fumigation of house and contents removes what might have been a dangerous source of infection to future occupants (the house was a rented one). I am led to wonder how many fatal cases of apparently pure lobar pneumonia have a tuberculous foundation. The moral to be drawn is that in any case of pneumonia with purulent sputum, a careful and if necessary repeated search should be made for the presence of the ubiquitous tubercle bacillus.

References.

(1) M. Fishberg: "Pulmonary Tuberculosis," Third Edition, 1922, page 433.

(2) W. Osler and T. McCrae: "The Principles and Practice of Medicine," Ninth Edition, 1920, page 184.

Reviews.

OPERATIVE SURGERY.

THE comprehensive work on operative surgery by Dr. W. S. Bickham is in six volumes of which the first three have been submitted for review.[1] The work represents an elaboration of the previous one volume edition and, unlike most other large systems of surgery, is the unaided work of the author spread over a period of some ten years. The magnitude of his task may be gathered from the preface in which it is stated that the completed work will contain nearly six thousand pages with more than two million words of text and some six thousand three hundred illustrations, the latter being the work of forty-six artists working for three years. The author has aimed at dealing with the operative technique of general surgery as well as of its special branches.

The volumes are excellently produced, well bound and printed and of convenient size. The numerous illustrations are well placed and well planned. Each volume is freely indexed and in addition a separate seventh volume will consist of a general index of the whole work.

In addition to the actual technique of operations the pre-operative and post-operative treatment of patients are fully discussed.

The subject is divided into three parts: Part I., General Procedures Employed in Surgical Operations; Part II.,

[1] "Operative Surgery, Covering the Operative Technic Involved in the Operations of General and Special Surgery," by Warren Stone Bickham, M.D. and Phar.M. (Tulane), M.D. (Columbia), F.A.C.S.; in Six Volumes and Index Number; 1924. Philadelphia and London: W. B. Saunders Company; Melbourne: James Little; Royal 8vo.; Volume I., pp. 850, with 921 illustrations; Volume II., pp. 877, with 1,008 illustrations; Volume III., pp. 1000, with 1,249 illustrations. Price: 50s. net each volume.

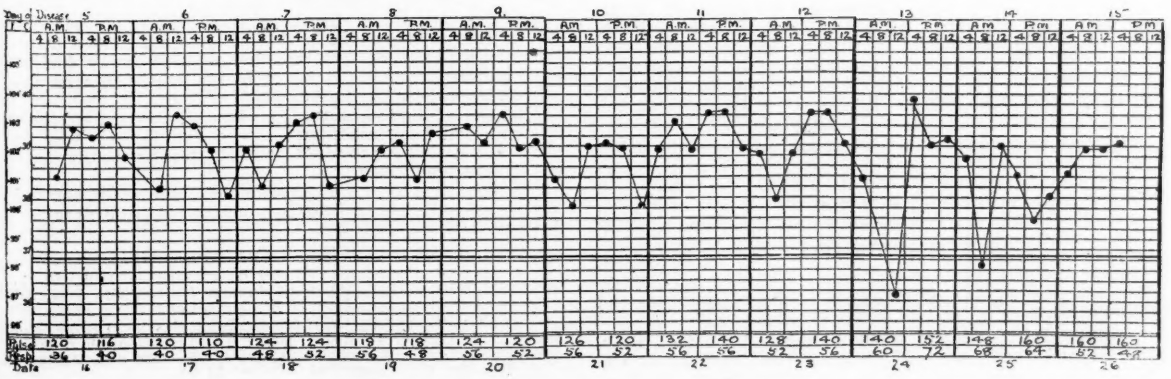

FIGURE I.—Temperature chart of Dr. Harvey's patient.

General Operative Surgery; Part III., Special Operative Surgery. As far as possible operations have been so named that the designation conveys the nature of the operative procedure, anatomical designation of the structures involved and credit to the deviser of the operation, for example "Interscapulo-Thoracic Disarticulation of the Upper Limb together with the Scapula and part of the Clavicle—by Antero-Inferior (or Pectoro-Axillary) and Postero-Superior (or Cervico-Scapular) Flaps—Berger." The description of each group of operations is preceded by an account of surgical anatomy, surface landmarks and general surgical considerations. In dealing with each operation the subject matter is arranged under the following headings: Description of operation; preparation of patient and operation site; position of patient, surgeon and assistants; landmarks of operations; incision; steps of the operation; comments.

Volume I. consists of two parts. In the first three hundred and fifty pages are described general surgical procedures, methods of sterilization, anæsthetics local and general and after treatment of patients operated on. The section on anæsthetics contains a very complete account of all modern appliances and methods and is generously illustrated. It is stated that an objection to the routine use of iodine for skin preparation is that some patients are unusually susceptible to contact with iodine, even to the extent of losing their lives. In the pre-operative preparation of hæmophilics, blood transfusion is not mentioned. In severe jaundice reliance is placed on the administration of calcium by mouth or rectum and no reference is made to the intravenous or deep intra-muscular methods. The statement under post-operative rectal alimentation that raw eggs, peptonized proteins and many other such substances are readily absorbed, is hardly in accord with modern physiological teaching.

The second part of Volume I. deals with general operative surgery, skin grafting, plastic surgery, transplantation of tissues and organs, amputations and disarticulations, selection and fitting of artificial limbs and excisions and osteoplastic resections of bones and joints. The section on artificial limbs and cineplastic amputations is excellently done. A notable omission in an otherwise comprehensive account of plastic surgery is the use of pedicled and tubular flaps so largely used by Gillies and others in dealing with war wounds.

Volume II. is devoted to operative procedures on blood vessels, lymphatics, nerves, bones, muscles, fasciæ, tendons, bursæ, cartilages and joints as well as the brain and spinal cord. The chapter on blood transfusion is disappointing. No mention is made of blood groups or methods of testing and the advice that a blood relation is the best type of donor and next to this the donor must be of the same race, is not very helpful. Also, many methods of direct transfusion, now chiefly of historical interest, are fully described, while descriptions of the almost universally used indirect method could be amplified. No mention is made of post-transfusion reactions.

In the chapter on nerves no mention is made of the division of the sensory root of the Gasserian ganglion for trigeminal neuralgia and amongst the other authorities quoted in a full description of bone surgery one would have expected to find the late William Macewen's name. Many surgeons will disagree with the practice advised of draining an infected knee joint by rubber tubes carried from side to side through the joint and also with the statement that after removal of a displaced cartilage by operation the knee should be immobilized for six to eight weeks, the muscles being kept up by massage in the meantime.

Operations on the skull and brain are fully described and illustrated. The method of excision of the wound which Cushing and others found so valuable in compound fractures of the skull due to war wounds, might have been mentioned, while the description and illustrations showing the successful removal of cerebral tumours with the aid of suction tubes and other devices gives an erroneous idea of the apparent ease and success of such procedures. The surgery of the spinal cord is fully described and illustrated.

Volume III. is devoted to the surgery of the face, neck, breast and chest, as well as the special surgery of the eye, ear, nose and throat, accessory sinuses and larynx.

In describing the operation for diverticulum of the œsophagus only the method of excision of the sac is described; no mention is made of the safer, two-stage method. The chapter on surgery of the chest is particularly well done and copiously illustrated.

It will therefore be seen from the three volumes so far reviewed that this work represents what is probably the largest treatise yet written on operative surgery. It contains much detailed information which is readily accessible owing to the completeness of the index. The illustrations are so numerous and so well arranged that the details of the operations can be readily followed. It is a most useful book of reference.

DISEASES OF THE RECTUM.

DR. HILL in his "Manual of Proctology" presents his subject in such a short, simple yet lucid manner that he makes it appear easy. To the general practitioner this book must prove most valuable as it gives information concerning familiar symptoms which common though they be, are yet difficult to explain and which are therefore often difficult to treat. With the aid of this book any practical medical man could treat the majority of these patients in their own homes or in some hospital not specially devoted to surgery and this in spite of the fact that these conditions frequently end in a result which is not quite satisfactory to the patient.

The chapters on rectal abscesses and on prolapse of the rectum stand out, although all are good except the last. It is a pity that the author added to an otherwise original treatise the last chapter on the radical operation for cancer of the rectum. It is but a reprint of Mr. Miles's paper from *The British Journal of Surgery* in 1914. It not only adds bulk and expense to an otherwise good book, but it deals with a subject which is far removed from the scope of this work, belonging as it does to major surgery. By its inclusion it might tempt some who have not had the necessary experience, to try to perform it. This could not be to the best advantage of a patient in a country such as Australia, where every member of the community has an opportunity to receive the benefit of the most skilled surgical assistance for any chronic disease. However, in spite of it the book is of readable dimensions and can be thoroughly recommended for every day use.

MANUAL ON DIABETES.

DR. ELLIOTT JOSLIN has issued a new and revised edition of his "Diabetic Manual for the Mutual Use of Doctor and Patient."[2]

We have previously called attention to the great value of this little book and can only reiterate our former statement that every patient who is being treated for diabetes, should master the contents of this very easily understandable book and that no doctor should attempt to treat any such patient unless he is at least familiar with all that this book contains.

The new feature of the book is a chapter on the use of "Insulin" and perusal of this chapter will dispel many illusions which many patients and we fear many doctors have suffered from, as a result of the statements on the subject appearing in the lay press.

The quaint little chapter on dogs, diabetes and their friends should be read by all who are in any way in contact with diabetes and by all who have any anti-vivisection tendencies.

The book is full of information, beautifully set out and illustrated and can be heartily commended to doctors and patients alike.

[1] "A Manual of Proctology," by T. Chittenden Hill., Ph.B., M.D., F.R.C.S.; 1923. Philadelphia and New York: Lea and Febiger; Post 8vo., pp. 279, with 84 illustrations. Price $3.25 net.

[2] "A Diabetic Manual for the Mutual Use of Doctor and Patient," by Elliott P. Joslin, M.D.; Third Edition, thoroughly revised; 1924. Philadelphia and New York: Lea and Febiger; Post 8vo., pp. 211, illustrated. Price: $2.00.

The Medical Journal of Australia

SATURDAY, NOVEMBER 29, 1924.

The Official Recognition of Science.

ON October 20, 1924, Royal assent was given to a short measure called the *Zoological Museum Agreement Act*. The Hansard record of this measure is singularly brief. The bill was brought in by Senator Pearce and was read on October 3, 1924, in the Senate for the second time. The Minister for Home and Territories made a short speech, explaining the object of the bill and paid a graceful tribute to Dr. Colin MacKenzie. After a single question the second reading followed without division and it passed through the committee stage without amendment. On October 8 the bill was read a third time. On the same day it was introduced into the House of Representatives by the Vice-President of the Executive Council. On October 9 the second reading was moved by the same member of the Ministry who pointed out that the thanks of the community and of Parliament were due to Dr. Colin MacKenzie for the gift of his collection of animals and zoological specimens. The remaining stages were formal and rapidly dispatched.

The *Act* contains three clauses. It enacts that there shall be a National Museum of Australian Zoology, that the museum shall consist of specimens and animals referred to in an agreement entered into between the Commonwealth of Australia and Doctor William Colin MacKenzie and contained in the schedule, and of such other specimens and animals as the Minister may direct, that the museum shall be housed and kept at such place as the Minister may direct and finally that the agreement is approved by Parliament. The agreement is practically a deed of gift of a very valuable collection of Australian animals and zoological specimens by Dr. Colin MacKenzie to the Commonwealth. The donor is prepared to house and maintain the collection for the time being until a suitable museum is built at Canberra. When the museum is ready the Commonwealth undertakes to transport at its expense the animals and specimens to Canberra. Dr. Colin MacKenzie will then be placed in charge of the museum and will act as Director with the title of Professor of Comparative Anatomy.

This action on the part of the Government and of Parliament is of considerable significance. In the first place Parliament has undertaken to expend money for the furtherance of one of the fundamental medical sciences, that of comparative anatomy. This recognition of the importance of science outside the universities is very gratifying. The public does not usually take interest in scientific work. In the second place the Government has implicitly undertaken to lend its aid in a wholesome endeavour on the part of Dr. Colin MacKenzie and other earnest workers to place the science of comparative anatomy on a high plane in Australia and to establish the Australian school as one of the leading seminaries of the world. The third matter to which we desire to draw attention, is the fact that the Government has for once realized that it is wise to adopt measures to utilize the unique opportunities of this prolific continent before it is too late. Many of the native animals are rapidly becoming extinct. The institution of a National Zoological Museum with an eminent comparative anatomist as Professor and Director will insure that full use will be made of the opportunities that still exist for the gaining of knowledge.

The dictum of the Minister for Home and Territories that the Government accepted the gift with a sense of gratitude on behalf of the people of the Commonwealth and that he wished to express on behalf of the Senate and the people of Australia their high appreciation of the splendid public spirit which prompted Dr. MacKenzie to make the gift, will certainly be endorsed by the medical profession. The collection is well known to the profession and is recognized as one of very high scientific value. It represents the labours of many years by a keen and competent anatomist and investigator and its creation has entailed a considerable expenditure of money. No one will claim that the work is completed; there is much still to be done. But the collection which Dr. MacKenzie is giving to the nation, is an extremely valuable one and one from which an immense amount of knowledge can be

gathered. The Professor of Comparative Anatomy and those with whom he will be associated, will have to expend much energy in increasing the collection and in investigating the embryological and morphological as well as the purely anatomical characters of each animal and of each organ and tissue of these animals. There is no doubt concerning the success that will attend his labours, if his mental and physical vigour is happily maintained for a long succession of years. Dr. MacKenzie's generous gift and his valuable contributions to science have enriched Australia's possession not inconsiderably.

Current Comment.

THE BACTERIOLOGY AND IMMUNOLOGY OF SCARLET FEVER.

IT has long been known that the *Streptococcus hæmolyticus* can be recovered from the throats of patients suffering from scarlet fever. It has also been isolated from many of the lesions which complicate the disease, such as *otitis media,* arthritis, cellulitis and so forth. That efforts were made to prove that this organism is the cause of the disease is but natural. It is obvious that the constant presence of an organism in lesions of patients suffering from a disease is not proof that the organism is the cause of the disease. It may be present as a secondary factor. It is quite possible that a complicating organism may induce a certain amount of protective immunity. In the course of scarlet fever investigations many difficulties were experienced. In the first place streptococci are associated with a variety of pathological conditions in the human body and it was necessary to have available some means of determining what form of streptococcus, if any, was actually responsible. In 1919 Dochez, Avery and Lancefield elaborated a method for the differentiation of the various types of streptococci and subsequently many workers claimed that the streptococcus found in the throats of persons suffering from scarlet fever was of a definite type and was specific for the disease. A second difficulty that was experienced, was the frequent failure to reproduce the disease in animals. Levaditi in 1912 recorded the results obtained up to that time. He concluded that it was impossible to infect monkeys, but referred to successes which had been obtained with anthropoids. More recently Dochez and Sherman met with success in the transference of the disease to one dog and several hogs and guinea pigs. The recent work of Dr. G. F. Dick and Dr. G. H. Dick, however, has done much to throw light on this subject. By the injection of human volunteers they claim to have fulfilled all Koch's postulates. They have made many contributions to medical literature on the subject. A recent article describing the successive stages of their work and the point at which they have arrived, is full of interest.[1]

In the first place they found that streptococci were not usually present in the blood of patients suffering from scarlet fever. They inoculated volunteers subcutaneously with fresh blood serum and fresh whole blood from patients in the early stages of scarlet fever. No infections resulted. In order to determine whether or not the disease was caused by a filterable virus present in the throat, volunteers were inoculated in the throat and subcutaneously with filtered throat mucus obtained from patients in the early stages. These experiments were entirely without results. Volunteers were then inoculated with strains of hæmolytic streptococci isolated from patients suffering from uncomplicated scarlet fever. The inoculations were made by swabbing pure cultures of streptococci on the tonsils and pharynx. Some of the volunteers subsequently suffered from sore throat and fever, but none of them exhibited a rash. Later they produced typical scarlet fever in one volunteer by swabbing the throat and pharynx with a pure culture of a hæmolytic streptococcus isolated from the finger of a nurse who had acquired the disease while caring for a convalescent scarlet fever patient. In order to determine whether scarlet fever in this patient had been caused by the hæmolytic streptococcus or by a filterable virus associated with it in culture, a second group of volunteers was inoculated with the same culture after it had been passed through a Berkefeld "V" filter. These volunteers remained well. After a period of two weeks they were still well and were inoculated with the unfiltered culture. Forty-eight hours later one of them became affected with scarlet fever. This experiment was regarded as furnishing evidence that the experimental disease had not been caused by a filterable virus, but by the *Streptococcus hæmolyticus* itself.

Dr. G. F. Dick and Dr. G. H. Dick also state that the streptococci associated with scarlet fever do not all show the same cultural characteristics. They may be divided into two groups according to their effect on mannite. They have reproduced scarlet fever in volunteers with both these groups and have grown again in pure culture the strain that fermented mannite. They do not state whether or not the strain that did not ferment mannite, was grown again in pure culture. They claim that all Koch's postulates have been fulfilled and that they are justified in the conclusion that the hæmolytic streptococcus is the cause of the disease. Since the organism is not present in the blood of persons affected by scarlet fever, these two observers sought to determine how the rash was produced. They found that the streptococci produce a soluble toxin which is absorbed into the blood and causes the nausea, vomiting and the rash. This, they hold, offered them a scientific basis for the development of a skin test for susceptibility to scarlet fever, a basis for protective immunization and for the production of an antitoxin. It will be remembered that

[1] *The Journal of the American Medical Association,* July 12, 1924.

Schultz and Charlton in 1918 found that when one cubic centimetre of serum from a normal person or from one convalescent from scarlet fever, was injected into the skin of an individual with an acute scarlet fever rash, a blanching of the skin occurred at the site of injection. It was subsequently pointed out that the serum of some normal persons did not cause blanching. This was explained by Mair who held that the serum of normal persons causing blanching contained antitoxin. Conversely those whose serum failed to cause blanching, were susceptible to the disease. Drs. G. F. and G. H. Dick used a filtrate from the same culture that had produced the experimental disease and found that this filtrate used in proper dilution produced a reaction when injected into the skin of 41.6% of the persons tested who gave no history of having suffered from scarlet fever. They found that it produced no reaction or only a slight reaction in the skins of all the convalescent scarlet fever patients tested. They also found that the action of the toxin "was inhibited" by convalescent scarlet fever serum mixed with the toxin or injected intra-muscularly before the skin test was made. This has by many observers been referred to as a neutralization effect. It would probably be more correct to explain this by Ehrlich's side chain theory, for according to this the antitoxin in the blood would act as a receptor anchoring the toxin and destroying its toxicity. They also tested six patients before and after an attack of scarlet fever, a skin reaction occurred before the attack and none during convalescence.

The Drs. Dick go on to explain that it is possible by beginning with a small dose of toxin to immunize susceptible persons. The toxin is first standardized on human beings, because no animal has as yet been found that is suitable for this purpose. Adults are immunized by three injections of toxin at five day intervals. The first dose is equal to three hundred skin doses and this is increased to one thousand doses. They give details of the preventive measures undertaken in a series of one hundred and twenty-five persons who were exposed to scarlet fever infection. Seventy-three of the series were nurses who were tested and immunized before exposure. Sixty-three gave no skin reaction and received no further treatment. Sixty-two yielded a skin reaction. Of this number fifty-two were immunized with toxin. Ten had hæmolytic streptococci in their throats. These were treated with the serum of convalescent patients. None of the one hundred and twenty-five persons became affected by scarlet fever. Controls consisted in thirty-four individuals and seven contracted the disease.

During the course of the disease the body manufactures an antitoxin which can be used in the treatment of the disease. They have also found that a horse could be immunized. The first horse used produced an antitoxin of such strength that ten cubic centimetres of serum "neutralized" twenty times the amount of toxin that caused nausea, vomiting, fever and a rash in susceptible individuals. This antitoxin was concentrated by the same method used for other antitoxin sera. They state that its therapeutic value can be determined only by the results obtained from its employment in a large series of cases properly controlled.

In considering this work it will be at once conceded that Dr. G. F. and Dr. G. H. Dick have carried out work of extraordinary importance. They have proved beyond doubt the connexion of the hæmolytic streptococcus with scarlet fever. That there are difficulties in the way of accepting it as the sole cause of the disease has been pointed out by several observers and amongst them is Dr. Abraham Zinger.[1] Dr. Zinger holds that if the hæmolytic streptococcus is regarded as the cause of scarlet fever, it is necessary to explain the well known permanent immunity produced by an attack of the disease. Such an immunity is not known to follow an infection with any other strain of the organism and it produces a great variety of pathological processes. The permanent immunity can be explained if scarlet fever be regarded as a combined toxic and bacterial infection in which the immunity to the disease is chiefly of an antitoxic and not to any extent of an anti-bactericidal character. The absence of any decided degree of anti-bactericidal immunity can be seen from the fact that secondary complications with the specific hæmolytic streptococcus frequently occur during convalescence at a time when the patient has developed a definite antitoxic immunity and has failed to yield a response to the Dick test. Dr. Zinger states that Bliss, Tunnicliff, Stevens and Dochez report the isolation of the apparently specific streptococcus from the local wound in "wound scarlet," from the infected burn in "burn scarlet," from the lochial discharge in puerperal scarlet fever and from the patients and from the milk in a milk epidemic of scarlet fever. Williams and her associates also isolated similar strains from a wound, from a normal throat, from the throat of a patient with measles and from the throat of a patient with osteo-myelitis. Toxins were made from these strains according to the Dick method. Dr. Zinger tested the different toxin preparations and found that they gave specific skin reactions similar in every respect to those produced by the Dick toxin. These toxins were also "neutralized" by the addition of serum from convalescent scarlet fever patients. It will be seen that these observations open up the question of the specificity of the organism and the existence of more than one strain.

The similarity of the Dick test to the Schick test is at once apparent and indeed the acceptance *in toto* of the findings of the Drs. Dick leads to the regarding of scarlet fever as an entity analogous in many ways to diphtheria. Dr. Zinger in his very interesting paper reports results of extensive investigations which in a large measure confirm the findings of the Dicks. It is impossible and indeed unnecessary to refer to these in any detail. Enough has been said to show that the Dicks have by their careful investigations laid the foundations of a very important advance in preventive medicine, an advance which may ultimately lead to the control of scarlet fever.

[1] *The Journal of the American Medical Association*, August 9, 1924.

Abstracts from Current Medical Literature.

PHYSIOLOGY.

Preparation and Properties of an Ovarian Hormone.

A HORMONE which causes typical œstrus in spayed rats has been prepared from *liquor folliculi* and whole ovaries by E. A. Doisy, E. Allen, J. O. Ralls and C. S. Johnston (*Journal of Biological Chemistry*, February, 1924). Extraction of the lipoids with hot alcohol is followed by hydrolysis with sodium hydroxide and evaporation to dryness. The hormone is subsequently extracted from the soaps with chloroform or ether. The hormone is not cholesterol and does not give cholesterol colour reactions. It is soluble in lipoid solvents but insoluble in water and is stable towards dilute boiling acids and alkalis. Preparations from placenta, *liquor folliculi* and ovaries from which the *liquor folliculi* have been removed, are active. Those from embryos and *corpora lutea* are inert.

Improvement in Nutrition from Increased Milk in the Diet.

H. C. SHERMAN AND H. L. CAMPBELL (*Journal of Biological Chemistry*, May, 1924) have shown that when dry milk constitutes one-sixth and ground whole wheat five-sixths of the food mixture the diet is adequate for growth and reproduction in the rat. Normal nutrition has been maintained for eight generations on this diet. They have shown that improvements in nutrition can be brought about by alterations in such a diet in the way of adding a greater proportion of milk. With one-third milk powder and two-thirds whole wheat they found more rapid growth, particularly as measured by the gain in weight during the period following weaning, and more efficient growth during the same period as shown by the greater gain in weight per thousand calories of food consumed. The rats on this diet also came to earlier maturity as shown by age of female at birth of first young, longer duration of reproductive life, greater success in rearing of young as evidenced by increase both in numbers and in percentage of young reared and by decrease in percentage of females failing to bear and rear young. There was also better growth of young during the suckling period as shown by larger average weight at the uniform weaning age adopted.

Graphic Registration of Respiratory Exchange.

J. G. DUSSER DE BARENNE AND G. C. BURGER have described a method for obtaining a graphic record of oxygen consumption and carbon dioxide output (*Journal of Physiology*, August, 1924). A Krogh spirometer with a layer of soda-lime on the bottom for absorbing carbon dioxide has attached to it Müller valves and a large rubber balloon in a larger vessel which is air tight and filled with oxygen. The rubber balloon acts as a carbon dioxide trap when the carbon dioxide output is being measured. When the oxygen consumption is being measured this trap is out of the circuit. Two series of curves will be obtained, one for the oxygen consumption and the other for the carbon dioxide output. From these curves immediate information may be obtained about the respiratory quotient, for it can be directly measured from the graphs. It is possible also to obtain an exact measurement of the expired carbon dioxide and also of the consumed oxygen in the cause of a single experiment.

Effect of Respiration on Pulse Wave Velocity.

S. K. HICKSON AND B. A. MCSWINEY (*Journal of Physiology*, August, 1924) have studied the effect of respiration on the pulse wave velocity as determined by the hot wire sphygmograph. The blood pressure was recorded and the carotid radial tracings were taken by means of a hot wire sphygmograph together with a respiratory curve from a normal subject seated comfortably in a chair. It was found on taking similar points on the inspiratory curve that the carotid radial intervals varied very little and seldom by more than 1 in 500. Similar points on the expiratory curve also varied very little from one another, but were found to differ from the inspiratory intervals by a greater amount, namely 1 in 250. In some cases the variation was small, but in cases when it was considerable a difference in blood pressure during inspiration and expiration could be readily determined by the auscultatory method. The blood pressure was found to be higher on expiration than inspiratoion in all cases and this corresponded with the slightly increased time interval and accounted for the lower pulse wave velocity during inspiration.

Sugar Ingestion and Breathing.

THE principal alterations shown by the respiratory exchange as a result of the consumption of carbo-hydrates are, of course, well established, but not much attention has been directed to the variations of the breathing in these circumstances, though the alteration in the respiratory exchange resulting in a rise of the respiratory quotient and showing itself mainly in an increase in the carbon dioxide output, affords an opportunity for investigating the accuracy with which breathing is coordinated with small changes in the metabolism of the body. C. G. Douglas and J. G. Priestley (*Journal of Physiology*, August, 1924) have studied the effect of the ingestion of cane sugar from this point of view. They find that the rise of the respiratory exchange and respiratory quotient which results from the ingestion of cane sugar is accompanied by an increase in the breathing. The effective alveolar ventilation and not the total ventilation of the lungs was found to vary under these circumstances in direct proportion to the carbon dioxide output and a good example is thus afforded of the delicacy with which the breathing is correlated with relatively small variations in the carbon dioxide output of the body.

A Vago-Pressor Reflex.

IT is well known that in hæmorrhage there is constriction of arterioles and this is usually alleged to be due to increased action of the vasomotor centre. There is also a fall of venous pressure, but no one appears to have suggested that this fall is responsible for keeping up the vasomotor tone. R. J. S. McDowall (*Journal of Physiology*, August, 1924) has carried out a series of experiments to investigatae this point. Cats anæsthetized with "Chloralose" were used and various methods were adopted to reduce venous pressure. A certain amount of alcohol causes a profound fall of venous pressure, although the arterial pressure may be unchanged. If after the administration of alcohol the vagi be cut, there is considerable fall in arterial pressure. If blood be withdrawn from the animal to lower the arterial pressure to sixty or eighty millimetres of mercury and also the venous pressure, section of the vagi causes a further fall of arterial pressure. Lowering the venous pressure by other means and then cutting the vagi bring about similar results. It is considered that this is due to a vago-pressor reflex and not to changes in the heart rate. The evidence indicates that when the venous pressure is low impulses pass up by way of the vagus and stimulate the vasomotor centre and so increase the arterial tone. The reflex is important in supplementing the depressor reflex in conditions of blood loss.

Anacrotic Pulse.

J. C. BRAMWELL (*American Journal of Physiology*, March, 1924) offers an explanation for certain forms of anacrotic pulses. The sphygmogram expresses graphically a pressure-time relation at a particular point, but the pulse wave may also be considered as a pressure-distance relation at a particular instant. In the course of transmission to the periphery the form of the pulse wave changes, since the different elements of which the wave is composed, travel at different rates. Elements which travel quickly, tend to catch up others which are travelling more slowly. Under certain circumstances portions of the front of the pulse wave may become so steep that their motion is rendered unstable. Such a condition would be likely to give rise to irregular oscillations of pressure in the arteries. Under the very circumstances in which such rapid pressure vibrations might on purely mechanical grounds be expected, it is possible to demonstrate their existence in the arteries. It is suggested, therefore, that certain types of anacrotic vibrations may be produced in a purely mechanical way.

BIOLOGICAL CHEMISTRY.

Phosphoric Esterase in Ossifying Cartilage.

R. ROBISON AND K. M. SOAMES (*Biochemical Journal*, May, 1924) have obtained further support to the belief that the esterase ferment is actively concerned in bone formation in cartilage and that the enzyme is present in the region of the osteoblasts and hypertrophic cartilage cells. It had been shown that the bones and ossifying cartilage of young animals contain and enzyme which hydrolyses rapidly hexose monophosphoric ester and glycero-phosphoric ester with the liberation of phosphate ions. The suggestion had been made that this enzyme is concerned in the process of ossification by bringing about the hydrolysis of phosphoric ester, thus causing a local increase in the concentrataion of inorganic phosphate ions. As a consequence calcium phosphate is precipitated and deposited in the solid state. In some recorded experiments split bones from young rats in which rickets had developed on a diet deficient in fat-soluble A factor and in phosphorus, had been placed in solutions of phosphoric esters. Sections treated in a suitable manner show the deposition of lime in the region of the osteoblasts and in the enlarged cartilage cells. Suitable controls immersed in various solutions have given no results. These results uniformly obtained leave no doubt that fresh calcium phosphate had been deposited in the sections treated with the phosphoric esters. Further experiments show that this bone enzyme hydrolyses ethyl butyrate and triacetin, but has no action upon olive oil. The optimum concentrataion of hydrogen ions lies on the alkaline side of neutrality which favours the precipitation of tertiary calcium phosphate and of calcium phosphate.

Phosphoric Esters in Blood.

H. D. KAY AND R. ROBISON (*Biochemical Journal*, May, 1924) have advanced an experimental proof that blood contains phosphoric esters which are rapidly hydrolysed when brought into contact with bone enzyme under suitable conditions. The demonstration of the necessary substrate thus increases the probability that the "bone esterase" plays a part in ossification in cartilage. Experiments made on the corpuscles of the blood of the sheep show that the neutralized protein-free filtrate from the laked corpuscles treated with bone enzyme for twenty-four hours at 37° C. shows a decided augmentation in the amount of inorganic phosphates. Similar treatment of the filtrate of plasma yields an inconclusive result. With whole blood from the rabbit it has been shown that a proportion of the phosphorus may be converted to inorganic phosphates and that an increase in the enzyme leads to no further increase in the amount of inorganic phosphate produced. The cessation of hydrolysis is therefore due to an exhaustion of the substrate. In the blood of human adults and children and in cockerels the amount of hydrolysable esters can be estimated. The amount of esters hydrolysed by the bone enzyme varies between 14% and 36% of the total acid-soluble phosphorus. These esters are almost entirely present in the corpuscles since attempts to demonstrate the presence of the hydrolysable esters in the plasma lead to inconclusive results. The evidence obtained in these experiments has reference almost entirely to the corpuscles. The objection thus remains that deposition of calcium must be determined ultimately by the concentration of calcium and phosphate ions in the plasma in which the quantity of phosphoric ester must be small. The authors suggest to meet this difficulty that if the concentrations of esters in the corpuscles and in the plasma are in equilibrium, the corpuscles would act as a reservoir. Further they point out that a very small amount of esters in plasma saturated with calcium phosphate would be sufficient to bring about deposition of the solid phase by increasing the concentration of phosphate ions when hydrolysis occurred. Evidence has been obtained in this investigation that the phospholipins although derivatives of glycerophosphoric ester are not hydrolsyed by the bone enzyme.

Phosphorus in Blood.

M. MAITLAND AND R. ROBISON (*Biochemical Journal*, May, 1924) have made numerous micro-estimations of inorganic and total phosphorus in blood and have noted some sources of errors in the different methods that have been employed. The method of Briggs is free from the main objections made against the original Bell-Doisy method. The colour developed after the addition of the ammonium molybdate solution is stable. Care must be taken to carry out the oxidation at a moderate temperature, otherwise loss occurs during ignition owing to the glass taking up phosphates. The use of trichloracetic acid to precipitate proteins introduces no error provided the colorimetric measurements are made not more than thirty minutes after adding the reagents. The authors have often noted that there is an increase in the amount of inorganic phosphate in blood after its withdrawal from the body. This increase may amount to 50% in two hours in laked blood. No increase at all occurs even at 37° C. in two hours in the presence of 1% trichloracetic acid. It has been observed that this increase in the inorganic phosphates of blood occurs after ether anæsthesia and as a result of shock due to cardiac puncture.

Anti-Rhachitic Properties of Cow's Milk.

E. M. LUCE (*Biochemical Journal*, May, 1924) has shown that the milk of the one cow may exhibit wide variations in the anti-rhachitic and growth-promoting qualities of the milk. The diet of the cow seems to be the main factor in causing a variation in the growth-promoting quality of the milk. When the cow has received a diet of fresh green grass, the milk is found possessed of higher growth-promoting value than when dry fodder is fed to the cow. This result is obtained irrespective of whether the cow is kept out of doors in sunlight or in a dark stall. The anti-rhachitic value depends on the diet of the cow and possibly also on the degree of illumination to which the cow is exposed. Milk from a pasture-fed cow is possessed of a higher growth-promoting value than that of the same cow fed in a dark stall. The author discusses the cause of the seasonal incidence of rickets in children and asks whether an answer can be supplied to the query that the seasonal incidence of rickets is not due to the higher anti-rhachitic value of the milk in the winter months.

Synthesis of Starch.

E. C. GREY (*Biochemical Journal*, April, 1924) has proved that bacteria synthetize starch abundantly from glucose. The fermentation has been caused by mixing an emulsion of bacteria containing some soluble nitrogenous matter with a solution of glucose containing about 0.6% salts. Chalk is added to neutralize the acids which are produced by the fermentation. This fermentation is carried out in the absence of air, but the bacteria have been grown previously aerobically on agar. In one experiment the organism was of coliform type in pure culture. It was slightly motile and became decolorized with Gram's method. It fermented lactose, glucose and mannitol with the production of both acid and gas. It did not ferment dulcitol. The author showed that hydrolysable carbo-hydrate was produced from the sixteenth to the fortieth hours by reduction after hydrolysis and by increased optical rotation. The material formed is quite soluble in water and has all the properties of soluble starch. The major part of the starch is present in the bodies of the bacteria and is liberated by prolonged boiling of the solution.

Amide Nitrogen of Caseinogen.

J. M. LUCK has studied the liberation of ammonia during the digestion of caseinogen by trypsin (*Biochemical Journal*, March, 1924). During the prolonged digestion of caesinogen by trypsin about two-thirds of the total ammonia liberated by acid hydrolysis is obtained. One-third of the total ammonia is not set free by the enzyme. The residue which resists the action of the enzyme, is only partially precipitated by ethyl alcohol, but totally thrown down by phospho-tungstic acid and mercuric chloride. This residue consists almost entirely of glutaminic acid and lysin. On acid hydrolysis 8% to 10% of the nitrogen is set free as ammonia. Evidence is adduced that this ammonia is not combined with lysin. The author, therefore, concludes that glutamine or a glutamine-containing-peptide is present in the residue left after the tryptic digestion of caseinogen.

British Medical Association News.

SCIENTIFIC.

A MEETING OF THE VICTORIAN BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held in conjunction with SAINT VINCENT'S HOSPITAL CLINICAL SOCIETY, at Saint Vincent's Hospital on October 1, 1924. The meeting took the form of demonstrations by members of the honorary medical staff.

Spondylitis: Lumbar and Sacral Root Symptoms.

DR. L. S. LATHAM discussed the case of a female patient aged fifty-four years. Her ill-health had dated from a confinement fifteen years previously and for five years subsequent to the birth of the child she had suffered pain referred to the distribution of the left sciatic nerve. Pain was also experienced in the corresponding region on the right side, but at intervals only. The patient complained of weakness in the left foot and for three months she had experienced a feeling of tightness in the right ankle and hip joints. There was a considerable degree of stiffness in these joints and loss of power in the muscles operating them. She had been burned from trivial causes on several occasions, always on the left lower limb and diminution of sensibility over this extremity was demonstrated by physical examination. The Wassermann test as applied to the blood serum did not disclose any evidence of syphilis. Advanced spondylitis affecting the lumbar vertebræ was evident in an X-ray photograph.

Pulmonary Lesion and Associated Enlargement of the Liver.

Dr. Latham's second patient was a woman, aged forty-two years. She exhibited cyanosis, cough accompanied by expectoration and physical signs of pathological changes in the left lung. Hæmoptysis involving the loss of a small amount of blood, had also occurred. The liver had been very much enlarged, but had diminished in size during the time that the patient had been under observation.

Complement fixation tests had been carried out with respect to tuberculosis, syphilis and hydatid disease, but no reaction had occurred with any of the tests. A reaction, however, was recorded by the Casoni intra-dermic test for hydatid disease.

Parkinsonian Syndrome.

DR. F. E. MCAREE showed a male patient, aged forty-two years, who displayed the features of Parkinson's disease as it had supervened on *encephalitis lethargica*. In 1918 this man had contracted "Spanish" influenza, in the course of which facial paralysis occurred. He had made an apparently complete recovery. He had become ill again in 1921 and was considered to be affected by *encephalitis lethargica*. The earliest manifestations of his present condition were stiffness and tremors affecting the muscles of the left side of the body and at a later period he had made complaint of a sensation that his tongue was becoming too large for his mouth. The mask-like expression of the face had gradually developed and at the time of demonstration there was a considerable degree of general muscular rigidity and tremor.

Spasmodic Tic.

In the second instance Dr. McAree showed a young woman who was suffering from spasmodic tic. The irregular muscular contractions were confined to the right sterno-mastoid muscle; the condition was of three years' duration and slight torticollis had developed. There had been no antecedent illness.

Hemiparesis.

DR. G. P. O'DAY presented a man, aged thirty-two years, who had sought treatment on account of double vision and weakness in the musculature of the left side of the body. He had also experienced strange sensations of tingling in the left upper and lower extremities. There was no demonstrable diminution in sensory perceptions. The plantar reflex on the left side was of extensor character and on this side also no response followed attempts to elicit the superficial abdominal reflexes. The systolic blood pressure was recorded as 120 millimetres of mercury. Examination of the ocular fundi did not disclose any pathological changes and the urine was also clear as judged by routine chemical and microscopical examination. The report with reference to the Wassermann reaction had not been received.

Bladder and Rectal Incontinence.

Dr. O'Day also discussed the case of a boy, aged nine years, in whom diurnal and nocturnal incontinence of urine and fæces was relieved by applications of high frequency current to the sacrum.

Sinusitis in Relation to Other Diseases.

DR. SYDNEY PERN showed a series of patients as illustrating the relationship of sinusitis to other diseases.

Mrs. M., aged thirty-seven years, had been operated upon for exophthalmic goître thirteen years previously. Her general thyreo-toxic symptoms had been relieved, but the exophthalmos persisted. For the previous seven years, owing to the extreme degree of protrusion of the eye-balls she had been unable to close the lids completely and had consequently suffered much from conjunctivitis. She had also been troubled with double vision. Complaints of severe and persistent headaches had led to examination and detection of yellow post-nasal discharge. Treatment by the injection of colloidal manganese had been instituted and within a week the headaches had ceased, the diplopia had vanished and the eyes had begun to recede. The proptosis had diminished steadily and at the end of three months there was very little prominence of the eye-balls. Dr. Pern presented this patient as illustrating the relationship between sinusitis and exophthalmos.

A woman, aged fifty-four years, the subject of thyreo-toxic goître for ten years had been found to have sinusitis and infected tonsils. She had suffered greatly from headaches. In March, 1924, a course of injections of colloidal manganese had been given and the post-nasal discharge which had been present for an indefinite period, had rapidly disappeared. In August, 1924, the patient had contracted a severe coryza which led to a recurrence of the yellow post-nasal discharge. She had been given a further course of injections, but a certain amount of mucopus was still discharged into the post-nasal space, although the patient felt well and was free from headache. In this particular instance Dr. Pern considered that the maxillary antra were probably infected and that operation might be necessary. In some very similar cases, however, the patients had slowly progressed to health with the aid of a few injections of colloidal manganese given at intervals after the initial course.

A young woman, twenty-four years of age, had displayed a goître for five years. She had exhibited some exophthalmos and thyreo-toxic symptoms. In May, 1923, her weight had been 46.4 kilograms. She had been found to have profuse yellow post-nasal discharge with which the severe headaches were connected. Injections of colloidal manganese had been given and at the end of a fortnight the headaches had disappeared and there was no discharge from the nose.

In February, 1924, a return of the post-nasal discharge had been occasioned by a severe coryza, but it had yielded to a few further injections of manganese. On May 20, 1924, the patient's weight had been 55.5 kilograms. At time of demonstration there was no sign of goître.

A young woman, of twenty-one years, the subject of goître for nine years and chorea for four years, had first attended Saint Vincent's Hospital in October, 1922. At that time she had suffered from a profuse and offensive purulent discharge from the posterior nares. On November 9, 1922, the discharge had been noted as greatly diminished, a course of injections of colloidal manganese having been given in the interim. On January 26, 1923, great general improvement had been recorded and also a note that the choreiform movements had practically ceased. The ozæma was nearly well, the thyreoid gland was just perceptible and the patient's general health was very good.

Dr. Pern also presented five other patients whom he had treated on these principles.

Myxœdema.

DR. W. J. MANNING presented a woman, aged fifty-six years, who two years previously had undergone an operation by which three-quarters of the substance of the thyreoid gland had been removed. Since that time the patient had shown a progressive increase in weight and had developed the general features of myxœdema. This had supervened in spite of the fact that she had taken thyreoid tablets regularly. At the time of demonstration she was taking 9.24 gramme (four grains) of the thyreoid extract daily. An anomalous aspect of this woman's condition was that the increased pulse rate and free sweating associated with her former condition of hyper-thyreoidism still persisted.

Gastric Carcinoma.

DR. J. W. GRIEVE demonstrated from a man, aged sixty-nine years, whose symptoms of ill-health were of six months' duration. The more prominent of these were anorexia, vomiting and epigastric pain. Vomiting occurred immediately after the ingestion of solid food, but the pain was more or less constant and independent of the taking of food. There had been a loss in weight of nineteen kilograms during the last six months.

Physical examination revealed that the liver was enlarged, hard and of irregular surface; the general character of the organ as indicated by palpation was such as to suggest the presence of malignant deposits secondary to carcinoma of the stomach. Stenosis of the distal end of the œsophagus had been demonstrated by radiographic examination.

Sporadic Cretinism.

Dr. Grieve's second patient was a young woman of twenty-two years of age. The patient was the fourth of seven children. She had been recognized as a cretin when four years of age and had received thyreoid medication regularly ever since. An attempt at grafting thyreoid tissue had bee carried out at the Children's Hospital in 1906. The patient's height was 137.5 centimetres and her weight 50 kilograms. It had been ascertained that the child next in age in the family also presented features of hypo-thyreoidism.

Hypo-thyreoidism and Alopecia.

Dr. Grieve also showed a man of twenty-one years of age, who exhibited alopecia, an "earthy" pallor of the skin and puffiness beneath the eyes. He had been affected by dryness of the skin for years, but great improvement had followed the administration of thyreoid extract.

The basal metabolic rate had been determined as within the limits of normal variation.

Rheumatic Endocarditis.

Dr. Grieve demonstrated the physical signs of aortic and mitral endocarditis in a young man who had contracted acute rheumatism in November, 1923.

Perthes's Disease.

DR. J. NEWMAN MORRIS discussed points in connexion with Perthes's disease as exemplified in a girl, aged thirteen years. The patient had first attended Saint Vincent's Hospital in June, 1924, when she had stated that the left leg had caused a limp while walking for the previous six months. The order of onset of symptoms was as follows: (i.) Limping, the earliest symptom; (ii.) pain which the patient had felt in the left hip for the previous four weeks while walking; (iii.) swelling which had appeared shortly after the onset of pain and which seemed to be advancing.

Three weeks prior to the onset of limping the girl had received a slight injury to the left hip by being struck with the seat of a swing. Her family history and previous health were good.

Physical examination revealed that the left lower limb was 3.2 centimetres shorter than that of the right side and it was demonstrated further that the shortening had occurred above the great trochanter. There was very decided prominence and broadening of the great trochanter on the left side. Tenderness could not be elicited and there was no real wasting of the muscles. The range of movements of the left hip joint was not greatly affected, but there was some limitation of abduction, flexion and internal rotation. A skiagram showed flattening and fragmentation of the head of the femur, "mushroom" appearance and absence of rarefaction.

In commenting upon the history of this patient, Dr. Morris defined Perthes's disease as a non-tuberculous affection of the hip joint of doubtful origin. Slight trauma and low grade infection represented the most popular views regarding its ætiology. Rickets, syphilis and congenital anomaly had all been wrongly invoked in explanation of the pathological process.

Perthes's disease was to be differentiated from tuberculous disease of the hip joint by: (i.) The mildness of the symptoms; (ii.) the clinical course of the disease; (iii.) the absence of muscle wasting; (iv.) the position of the limb which was held in slight flexion and adduction in contrast to the abducted position of the joint in the early stages of tuberculosis; (v.) the radiographic appearances. The immediate prognosis was good, but sequelæ to be anticipated were *coxa vara* and osteo-arthritis in adult life.

Multiple Injuries to Abdominal Viscera.

Dr. Morris also showed a young woman, twenty years of age, who had been run over by a motor car on September 7, 1924. On her admission to Saint Vincent's Hospital at 7.30 p.m., abrasions on the head and legs and a small deep wound medial to the anterior superior spine of the left ilium had been noted. By 11.30 p.m. signs of intra-abdominal hæmorrhage had been apparent and the patient's condition had been very bad. Operation had been undertaken at midnight and when the peritoneal cavity was opened blood had gushed from the wound. The small intestine had been bruised for a distance of five centimetres in three separate places and it had been necessary to suture the enteric mesentery to check the bleeding occasioned by a tear. An oblique tear, ten centimetres long, had been found on the anterior wall of the stomach; both serous and muscular coats were torn and repair had been effected by suture.

Two large tears had been found on the medial surface of the spleen, one almost severing the upper pole and the other across the pedicle. A clamp had been applied to the splenic artery, which was bleeding freely. The spleen had then been removed. The serous surface of the tail of the pancreas had been torn away and there was a large retro-peritoneal hæmatoma in the left peri-renal region. A large drainage tube had been passed down to the tail of the pancreas, but the left kidney had not been touched as no blood was entering the peritoneal cavity from that source. Six hundred cubic centimetres of normal saline solution had been left in the peritoneal cavity and a similar amount had been injected intravenously. At 5 a.m. 690 cubic centimetres of blood had been transfused by the citrate method. The patient had made a good recovery.

Epithelioma of the Lip.

Dr. Morris had also assembled nine patients affected with epithelioma of the lip and discussed exhaustively the surgical treatment of this disease.

In reviewing the results he had obtained by operation for epithelioma of the lip during the previous four years, Dr. Morris stated that as far as could be ascertained all those patients from whom the neighbouring lymph glands had been removed early, were alive and free from recurrence, with one doubtful exception. Of those in whom operation on the glands had been omitted or delayed for various reasons, 80% were dead.

Cervical Ramisectomy.

DR. C. GORDON SHAW presented a female patient of nineteen years of age, upon whom he had performed the operation of cervical ramisection for the relief of spastic paralysis of the left upper limb. When seven years of age the patient had become hemiplegic as the result of a lesion which was then diagnosed as an embolic softening of the internal capsule. Before operation the rigidity of the left upper limb had been extreme; the limb had been quite useless and was maintained in the position brought about by flexion of the elbow and wrist joints and prona-

tion of the forearm. The fingers had been tightly flexed upon the palm and the patient had been able to extend them only by exerting force with the right hand.

The operation had been performed two months prior to the date and the meeting and Dr. Shaw demonstrated the absence of deformity and that the spasticity of the limb was much diminished. The patient was capable of feeding herself with the formerly useless left arm.

Treatment of Chronic Bone Abscess.

Dr. Shaw showed a second patient in order to illustrate the method of treatment he had adopted in dealing with chronic suppuration ("Brodie's abscess") in the distal end of of the tibia. After exhibiting a radiogram of the the condition before operation Dr. Shaw detailed the operation he had adopted. It had consisted in sub-periosteal resection of that portion of the bone in which the abscess was situated. The specimen was displayed and also a series of skiagrams showing the regeneration of bone. The ultimate result was excellent.

Lympho-Sarcoma of Neck.

DR. LEO DOYLE presented a young man in whom a very extensive lympho-sarcoma of the upper cervical region had been treated by deep X-ray therapy. The diagnosis had been confirmed microscopically and in the operation for the excision of a piece of the growth for pathological examination, it had been apparent that surgical removal of the whole mass was impracticable. The patient had received one application of deep therapy and although the tumour had not entirely disappeared, it had receded to a remarkable degree.

Old Fracture of Spine.

Dr. Doyle also exhibited a radiogram of the spine of a woman who had received various forms of treatment over a period of years for the relief of persistent pain in the back. Ten years previously she had been knocked down by a motor car; the X-ray film disclosed fracture and displacement of the transverse process of the first lumbar vertebra on the left side.

Dermal Leishmaniasis.

DR. HERMAN LAWRENCE demonstrated a patient who was suffering from "Delhi boils" or dermal Leichmaniasis. The patient had contracted the disease in India and himself attributed it to the effect of mosquito bites. It was six months since the trouble first appeared, but no new lesions had appeared since he left India. The disease was evidently gradually clearing away and this would account for the fact that Dr. Brennan had been unable to find any parasites in scrapings from the lesions. Dr. N. Hamilton Fairley was of opinion that the pathological process was that of Leishmaniasis.

Rhynophyma.

In showing a female patient affected by rhynophyma, Dr. Lawrence remarked that the pathological condition occurring in this disease was radio-sensitive and that good results could be obtained by means of radium if the disease were treated in the early stages. It was uncommon for rhynophyma to occur in women.

Syphiloderma.

Dr. Lawrence had made a provisional diagnosis of syphiloderma in a patient in whom cutaneous lesions somewhat resembling maculo-anæsthetic leprosy were present. The lesions were unilateral and there was no anæsthesia. As yet no report had been received regarding the result obtained by the application of the Wassermann test.

Nævus Flammeus.

Dr. Lawrence showed an infant affected by an extensive *nævus flammeus* of the face. He pointed out that the radio-sensitivity of the pathological tissues in such cases was very similar to that of the normal skin. If celloidin were applied to contract the blood vessels, short exposures of intense radiations sufficed to achieve a good radio-therapeutic result.

Calico Dermatitis.

A young woman was shown as presenting an eruption of which she had had three attacks. On each occasion the rash appeared after she had worked with white calico.

Xanthoma Palpebrarum.

In the treatment of *xanthoma planum* affecting the eyelids Dr. Lawrence had employed electrolysis. A fine (No. 14) needle, conveying a current of 1 to 1.5 milliampères had been passed into fatty-fibrous formation. The patient also displayed smaller lesions upon the arms and chest.

Multiple Rodent Ulcers.

Dr. Lawrence also showed a woman whom he had successfully treated by radium therapy for upwards of thirty rodent ulcers of the face. Microscopical examination had revealed the tumours to be definite basal-celled epitheliomata.

Carcinoma of Cervix Uteri.

DR. THOMAS MURPHY showed a woman, in excellent health and nutrition, whom he had treated for carcinoma of the cervix. The disease had first appeared four years previously when the patient was at the early age of thirty-one years. After the nature of the disease had been verified by the microscopical examination of a portion of excised tissue, Dr. Murphy had instituted radium treatment. The growth had apparently subsided, but recurred two years later. He regarded the recurrence as further proof of the malignant nature of the disease. Irradiation had again been adopted and the patient was at the time of demonstration, two years later, free from any indications of the disease. On each occasion ninety milligrammes of radium had been applied for forty-eight hours, fifty milligrammes without and forty milligrammes within the cervix.

Fibro-Myoma of the Uterus.

Dr. Murphy's second patient was a woman, aged thirty-five years, who had experienced a very difficult confinement on account of the presence of a fibroid tumour of the uterus. Hæmorrhage had continued for five or six weeks after the confinement. At this stage she had been referred to Dr. Murphy for the surgical removal of the tumour. On account of the presence of a very large amount of albumin in the urine it had been considered advisable to defer operation and as an alternative measure ninety milligrammes of radium had been introduced into the uterus and left in position for forty-eight hours. Although the amount of hæmorrhage had been considerably reduced, the tumour had not diminished appreciably in size and five or six months later, the renal condition having greatly improved, a large fibroid had been removed by surgical operation. The growth provided an excellent example of the red degeneration. With this fact was probably connected its non-susceptibility to radium.

Uterine Fibroids.

DR. A. NORMAN MCARTHUR showed a nicely mounted specimen of a uterus in which multiple fibroid tumours complicated early pregnancy. The patient had suffered a great deal of pain, induced by incarceration of the fibroids in the pelvis.

Two other specimens of uteri containing sub-mucous fibroids were shown as illustrating the procedure of "coning" the cervix in the performance of sub-total hysterectomy.

Pathological Specimens.

DRS. A. BRENNAN AND K. RUSH displayed a unique specimen of myxo-sarcoma originating in the pulmonary artery. The neoplasm arose on the proximal side of the bifurcation of the pulmonary artery and extended along the right branch to the limits of the right lung. On the left side the growth had not proceeded further than a point just beyond the bifurcation of the pulmonary trunk.

Microscopical sections of this specimen were shown, also macroscopical and microscopical preparations of a classical example of adeno-myoma of the uterus.

Radiograms.

A large number and variety of excellent radiographic films were demonstrated by DR. HERBERT M. HEWLETT.

Direct Laryngoscope.

DR. J. M. BAXTER demonstrated the use of a new pattern of laryngoscope designed for the performance of laryngoscopy and intra-laryngeal operations under direct illumination.

A MEETING of the Section of Psychiatry and Neurology of the Victorian Branch of the British Medical Association will be held at the Walter and Eliza Hall Institute for Research in Pathology and Medicine, Melbourne Hospital, on December 2, 1924, at 8 p.m.. Dr. S. V. Sewell will read a paper on "The Basis of Spasticity." All members of the Branch are invited to attend.

NOMINATIONS AND ELECTIONS.

THE undermentioned have been elected members of the New South Wales Branch of the British Medcal Associaton:

ARCHBOLD, GERALD, M.B., Ch.M., 1924 (Univ. Sydney), 60, Kensington Road, Summer Hill.
BANKS, J. M., ChM., 1924 (Univ. Sydney), Woodburn, Richmond River.
CARRUTHERS, DOUGLAS GORDON, M.B., Ch.M., 1923 (Univ. Sydney), "Highbury," Old South Head Road, Waverley.
EBBY, SYDNEY THEODORE, M.B., Ch.M., 1923 (Univ. Sydney), Wigram Street, Granville.
GORMAN, ADRIAN PATRICK, M.B., B.S., 1924 (Univ. Melbourne), Oaklands.
LUSCOMBE, C. W., M.B., Ch.M., 1923 (Univ. Sydney), Macquarie Street, Liverpool.
MORGAN, JOHN, M.B., Ch.M., 1923 (Univ. Sydney), "Allerton," The Avenue, Strathfield.

THE undermentioned have been elected members of the Victorian Branch of the British Medical Association:

HINRICHSON, WILLIAM HENRY, M.B., B.S., 1924 (Univ. Melbourne), 18, Rennie Street, Thornbury.
SUTTON, SELWYN BLIGH, M.B., B.S., 1924 (Univ. Melbourne), The Vicarage, Kew.
TATE, ALAN ROBERT, M.B., B.S., 1924 (Univ. Melbourne).

THE NATIONAL MUSEUM OF AUSTRALIAN ZOOLOGY.

FOR a correct understanding of the anatomy and physiology of the human body and of human development a knowledge of the reptiles, monotremes and marsupials of Australia is absolutely essential. In them the apparent complexities of the human body are revealed in their simpler form. Their study from the human standpoint was begun in 1788 by Dr. John White, the first Surgeon-General of Australia and a friend of John Hunter. During the one hundred and thirty-six years that have passed since John White landed at Sydney Cove, little work has been carried out on Australian fauna from the point of view of medical science. Yet its preservation and its study concerns the medical practitioner more than any other member of the community. It is computed that within a period of twenty years many of the Australian mammals will have become extinct; some of them are procured now only with difficulty. To further their study from the medical standpoint there was founded in Melbourne by Dr. Colin MacKenzie the Australian Institute of Anatomical Research. This included a museum and laboratories at St. Kilda Road, Melbourne, to which was added an area of eighty acres on the Badger River, Healesville, granted by the Victorian Government in 1920 for the study of Australian fauna in its native state. In 1923 Dr. MacKenzie handed over to the Commonwealth Government as a gift his laboratory equipment, together with the collection of live animals and museum collection of macroscopical and microscopical specimens. This was accepted on behalf of the nation by the House of Representatives and the Senate, as mentioned in another part of this issue. It is the most important collection dealing with the fauna of Australia in the world.

The National Museum will ultimately be situated at Canberra and the Commonwealth has undertaken to reserve a site suitable for the purpose and to construct at its own expense such buildings and other enclosures as are necessary for the accommodation of the specimens and animals.

The establishment of the National Museum, analogous to the Hunterian Museum in London and the Smithsonian in Washington, in the United States of America, both of which belong to the nation, means that Canberra will become the world's centre for the study of the unique fauna of Australia.

The importance of this to future generations of Australians cannot be over-estimated, since they will not have the privilege of seeing the members alive. It is to be hoped that medical men throughout Australia, realizing that the fight is against time, will assist the work of the Museum in every way. Rare specimens, points of interest in connexion with naturaly history, old drawings, manuscripts and prints will be acceptable. They should be sent to the Director, 612, St. Kilda Road, Melbourne, who will have them catalogued and placed either in the Museum or the Museum library.

Obituary.

GEORGE HARRY GIBSON.

THE instability of human life was brought home to me in no uncertain manner by death of my old and dear friend, George Harry Gibson. I had met him the day before his final illness and remarked to him that he was looking much better than usual, for he had been in bad health for some time previously.

From boyhood in the early 'seventies we had been friends, eventually going home to Edinburgh together to pursue our medical studies at the University. We sailed from Melbourne in the Peninsular and Oriental steamship *Pekin* in July, 1883, in order to commence the winter session in October.

Harry Gibson was a very popular student; he took part in all the affairs of student life and was a member of the Australian Club in Edinburgh. Many of the old members who are scattered throughout the colonies, will grieve to hear of his comparatively early decease. He graduated M.B., C.M. in 1887. He married Miss Jessie Galloway, the third daughter of Mr. James Galloway, of Bonnington, Edinburgh, and returning to Tasmania, started the practice of his profession in Hobart. By perseverance and ability, aided by a genial kind-heartedness he built up a large practice and was much beloved by all classes in the community. Many of his old patients are inconsolable, having been deeply attached to him during the thirty-six years of his practice. He was essentially a man's man, a leader in all outdoor sports, a keen fisherman and a splendid shot. He was a lover of all animal life, especially of horses and dogs.

While no bigot he was staunch in his attention to his religious duties, being an elder during the greater part of his life and up to the time of his death in the Presbyterian Church.

He leaves a widow, five sons and three daughters, one of his daughters having died in childhood some years ago. Apart from his practice he was interested in many things. He served as a member of the Fisheries Commission and other public bodies for many years.

During the war he was intensely patriotic. He sent three of his sons to the front, Dr. Stuart Gibson who has succeeded him in practice, and Bruce and George Gibson.

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He was President of the Returned Sailors' and Soldiers' Fathers' Association and did not spare himself in the service of the returned men. In fact he was going home from one of the meetings when the final illness came upon him from which he never recovered.

His family have to mourne a good husband and father. I can say of him with justice that the medical profession has lost a worthy member whom it could ill spare and whose aim throughout life had been to set a good example to those following him.

ROBERT G. SCOTT.

Books Received.

NORMAL BONES AND JOINTS: ANNALS OF ROENTGENOLOGY: A SERIES OF MONOGRAPHIC ATLASES, Edited by James T. Case, M.D., Roentgenologically Considered by Isidore Cohn, M.D., F.A.C.S., with a Foreword by Rudolph Matas, M.D.; Volume IV.; 1924. New York: Paul B. Hoeber, Incorporation; Crown 4to, pp. xxxii. + 219. Price: $10.00 net.

PHYSIOLOGICAL PRINCIPLES IN TREATMENT, by W. Langdon Brown, M.A., M.D. (Cantab.), F.R.C.P.; 1924. Baillière, Tindall and Cox; Crown 8vo., pp. viii. + 511. Price: 10s. 6d. net.

PROCEEDINGS OF THE IMPERIAL SOCIAL HYGIENE CONGRESS AT THE BRITISH EMPIRE EXHIBITION, WEMBLEY, MAY 12—16, 1924. London: National Council for Combating Venereal Diseases; Demy 8vo., pp. 286.

REMINISCENCES OF AN OLD PHYSICIAN, by Robert Bell, M.D., F.R.F.P.S.; 1924. London: John Murray; Demy 8vo., pp. xii. + 291, with illustrations. Price: 16s. net.

THE PNEUMOCOCCUS AND PNEUMOCOCCAL AFFECTIONS, by L. Cotoni, C. Truche and Mlle. A. Raphael; English Edition by D. S. Page, M.A., M.B. (Cantab.), D.P.H., and Eva Morton, M.R.C.S. (England), L.R.C.P. (London); 1924. London: John Bale, Sons and Danielsson, Limited; Royal 8vo., pp. 218, with numerous figures and charts. Price: 16s. net.

THE UNMARRIED MOTHER AND HER CHILD IN ENGLAND AND WALES, 1924. London: The National Council for the Unmarried Mother and Her Child; Foolscap 8vo., pp. 22. Price: 6d.

TRANSACTIONS OF THE FIFTH BIENNIAL CONGRESS OF THE FAR EASTERN ASSOCIATION OF TROPICAL MEDICINE, HELD AT SINGAPORE, 1923, Edited by The Honourable A. L. Hoops, M.D., D.P.H., B.A., and J. W. Scharff, M.B., D.P.H.; 1924 London: John Bale, Sons and Danielsson, Limited. Crown 4to., pp. 974. Illustrated with 86 plates (two coloured) and numerous charts in text. Price: 40s. net.

FINAL REPORT OF THE AUSTRALIAN HOOKWORM CAMPAIGN: 1st October, 1919, to 30th September, 1924. W. C. Sweet, B.Sc., M.D., M.R. San. I..

TEXT-BOOK OF PATHOLOGY, by Robert Muir, M.A., M.D., Sc.D., F.R.S.; 1924. London: Edward Arnold and Company. Royal 8vo., pp. 774, with illustrations. Price: 35s.

Medical Appointments.

DR. EDGAR ALEXANDER NORTH (B.M.A. has been appointed Assistant Government Medical Officer, Department of Chief Secretary, Victoria.

* * * *

DR. GEORGE GRAY NICHOLLS (B.M.A.) has been appointed Acting Medical Superintendent of the Hospital for the Insane, Ararat, Victoria.

* * * *

DR. HUGH GILMOUR WALLACE has been appointed Medical Officer of Health, Hunter River Combined District.

Medical Appointments Vacant, etc.

FOR announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser," page xvi..

DEVON HOSPITAL, LATROBE, TASMANIA: House Surgeon.

MENTAL HOSPITAL, PARKSIDE, SOUTH AUSTRALIA: Acting Junior Medical Officer.

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, 429, Strand, London, W.C..

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 30 - 34, Elizabeth Street, Sydney.	Australian Natives' Association. Ashfield and District Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham Dispensary. Manchester Unity Oddfellows' Medical Institute, Elizabeth Street, Sydney. Marrickville United Friendly Societies' Dispensary. North Sydney United Friendly Societies. People's Prudential Benefit Society. Phœnix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association Proprietary, Limited Mutual National Provident Club. National Provident Association.
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Brisbane United Friendly Society Institute. Stannary Hills Hospital.
SOUTH AUSTRALIAN: Honorary Secretary, 12, North Terrace, Adelaide.	Contract Practice Appointments at Renmark. Contract Practice Appointments in South Australia.
WESTERN AUSTRALIAN: Honorary Secretary, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND (WELLINGTON DIVISION): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

Diary for the Month.

DEC. 2.—New South Branch, B.M.A.: Ethics Committee.
DEC. 3.—Victorian Branch, B.M.A.: Annual General Meeting.
DEC. 5.—Queensland Branch, B.M.A.: Branch.
DEC. 9.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
DEC. 10.—Tasmanian Branch, B.M.A.: Branch.
DEC. 10.—South Sydney Medical Association, New South Wales.
DEC. 10.—Central Northern Medical Association, New South Wales.
DEC. 10.—Melbourne Pædiatric Society.
DEC. 11.—New South Wales Branch, B.M.A.: Branch.
DEC. 11.—Victorian Branch, B.M.A.: Council.
DEC. 11.—South Australian Branch, B.M.A.: Council.
DEC. 11.—Brisbane Hospital for Sick Children: Clinical Meeting.
DEC. 12.—Queensland Branch, B.M.A.: Council. Committee. Organization and Science Committee.
DEC. 16.—New South Wales Branch, B.M.A.: Medical Politics
DEC. 24.—Victorian Branch, B.M.A.: Council.
DEC. 26.—Queensland Branch, B.M.A.: Council.

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JAN. 8.—New South Wales Branch, B.M.A.: Council (Quarterly).
JAN. 10.—Queensland Branch, B.M.A.: Council.
JAN. 10.—South Australian Branch, B.M.A.: Council.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to "The Editor," THE MEDICAL JOURNAL OF AUSTRALIA, B.M.A. Building, 30-34, Elizabeth Street, Sydney. (Telephone: B. 4635.)

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